

# **Fire Weather Operations Plan For Weather Forecast Office Jackson Mississippi**



**For the County Warning Area of Extreme Southeast Arkansas  
Northeast Louisiana and Most of Mississippi**

**For 10/2014 to 10/2015**

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## Introduction

The Weather Forecast Office(WFO) forecast staff will issue a core suite of fire weather products consisting of the following for our fire weather service area:

- a. Fire Weather Planning Forecasts(fire weather zones)
- b. National Fire Danger Rating System Forecasts(NFDRS)
- c. Spot Forecasts
- d. Fire Weather Watches
- e. Red Flag Warnings
- f. Fire Danger Statements
- g. Fire Weather Matrix Forecasts
- h. Hazardous Weather Outlook for Fire Danger Situations

Meteorologists-in-Charge(MIC) and WFO fire weather program leader will annually reassess the criteria for issuance, frequency of issuance, format, content, dissemination, etc for each fire weather product. The Fire Weather Planning Forecast is a zone-type product used by land management personnel primarily for input in decision-making related to pre-suppression and other planning. The decisions impact firefighter safety, protection of the public and property, and resource allocation. The Fire Weather Forecast is a routine product that will be issued twice on a daily basis. The AOP contains actual issuance criteria and frequency of issuance information based on customer needs. The Fire Weather Forecast is valid from the time of issuance through day seven.

The forests of Mississippi are an important part of the states resources and are managed primarily by the Mississippi Forestry Commission(MFC) and the United States Forest Service (USFS) on public lands. The delta region of Northeast Louisiana and extreme Southeast Arkansas are primarily managed by the Louisiana and Arkansas State Forestry. Primary responsibility for providing meteorological support services resides with the Meteorologist in Charge at the Weather Forecast Office in Jackson, Mississippi. The objective of the fire weather services program is to provide meteorological support to the fire and land management community for the protection of life and property, promotion of firefighter safety, and stewardship of America's public wildlands. The National Weather Service shall issue fire weather forecasts and warnings as well as meteorological support for the public wildlands in support of the National Agreement for Meteorological Services in support of agencies with land management and fire protection responsibilities. The purpose of this operations plan is to provide guidance for all forestry interests as to the meteorological support that is available from the National Weather Service.

## **Coordination**

The Fire Weather Program Leader acts as the coordinator for the exchange of weather information from the National Weather Service to public and private forestry interests. As such, the Fire Weather Program Leader is in regular contact with wild fire and land management agencies, helping them assess their meteorological needs and informing them of the National Weather Service products and services available. Since two or more agencies are being served, strong efforts will continually be made for an agreement on common products, services, and formats to streamline NWS operations and still meet customer requirements. The Fire Weather Program Team works with the Fire Control Directors of the Regional State Forestry Commissions and the Regional Fire Management Officers of the US Forest Service to coordinate the program using the most efficient forecast and communications techniques available. The Fire Weather Program Leader, with the support of the Meteorologist in Charge, will keep the NWS staff forecasters informed and trained in meeting the forestry program objectives.

## **II. Service Area and Organization Directory**

### **A. Service Area**

The area served by WFO Jackson consists of the following parishes and counties in the County Warning Area.

#### **Extreme Southeast Arkansas(Mississippi Delta Region) Ashley...Chicot Counties**

There are no national forest units involved in this area. These counties reside in the Southeast State Forestry District number 1 of Arkansas. An illustration is attached in the Appendix Section.

#### **Northeast Louisiana(Mississippi Delta Region) Morehouse...West Carroll...East Carroll...Richland...Tensas...Franklin...Madison... Concordia...Catahoula Parishes.**

There are no national forests units involved in this area. These parishes reside in the eastern units of the State Forestry Districts 6 and 8. An illustration is attached in the Appendix Section.

#### **Most of Mississippi... The southern tier of the Northern Mississippi Counties of :**

**Bolivar...Sunflower...Leflore...Grenada...Carroll...Montgomery...Webster...Choctaw...Clay...Oktibbeha...Lowndes...Washington...Humphreys...Holmes...Attala...Winston...Noxubee.**

These counties include the southern unit of the Tombigbee National Forest. These counties reside in the State Forestry Districts of most of the Northwest Forestry District...extreme southern unit of the Northeast District, and the northern unit of the East Central District. An illustration is attached in the Appendix Section.

**The Central Mississippi Counties of :**

**Issaquena...Sharkey...Yazoo...Madison...Leake...Neshoba...Kemper...Warren...Hinds...Rankin...Scott...Newton...Lauderdale...Claiborne...Copiah...Simpson...Smith...Jasper...Clarke.**

These counties include the Delta National Forest, Bienville National Forest, and the northern unit of the Homochitto National Forest. These counties reside in the State Forestry Districts of the southern unit of the Northwest District, the northern unit of the Southwest Ranger District, the northern unit of the South Central District, and the southern unit of the East Central District. An illustration is attached in the Appendix Section.

**Portions of Southern Mississippi...which consist of :  
Jefferson...Adams...Franklin...Lincoln...Lawrence...Jefferson  
Davis...Covington...Jones...Marion...Lamar...Forrest.**

These counties include the southern unit of the Homochitto National Forest and the northern unit of the Desoto National Forest. These counties reside in the State Forestry Districts of the southern unit of the Southwest District, the southern unit of the South Central Ranger District and the northern unit of the Southeast District. An illustration is attached in the Appendix Section.

**C. List of WFO Backup Offices for Forestry:  
Primary Backup WFO Huntsville  
Secondary Backup WFO Shreveport**

### **III. Forestry Services and Products**

## **A. Basic Fire Weather Products: Routine**

### **Fire Weather Forecasts:**

The Fire Weather Forecast is designed to provide land management personnel weather input to be used for decision-making related to fire pre-suppression activities and other planning throughout the year.

### **Dissemination:**

This product is distributed to land management and fire weather agencies over the internet.

WFO Jackson.....[http://www.srh.noaa.gov/jan/?n=fire\\_weather](http://www.srh.noaa.gov/jan/?n=fire_weather)

### **General Elements:**

The following elements will be included in the Fire Weather Forecast products issued.

A. Headlines: A headline is used when Red Flag Warnings and/or Fire Weather Watches are in effect. The headlines will include the warning type, location and effective time period. The location will be described in terms of geographic or other easily identified markers, such as cities, towns, rivers, or highways. The headline for a warning and/or watch will also be included in each appropriate zone grouping.

B. Discussion: The discussion is a brief, clear, non-technical description of weather patterns, like a brief weather summary, that will influence the weather in the County Warning Area. The discussion will focus on the first two days of the forecast period. Any weather that has an impact on forestry operations, such as severe weather, fog, etc shall be included in the remarks section.

C. FIPS UGC Coding and County Description: The FWF format(UGC) is used to identify each specific forecast zone(on a county level) within a Fire Weather Forecast product.

D. Fire Weather Forecast Periods: The fire weather forecast periods will have three 12-hour periods in the morning forecast, and four 12-hour periods in the afternoon forecast. During these periods the standard and locally requested elements are included in each period of the forecast. Both issuances will have a general outlook out to seven days. In the general outlook section, a forecast period is a 24-hour time slot, beginning at midnight and ending at midnight the next day.

E. Standard Elements of Sky...Weather...Chance of Precipitation: These descriptors generally follow the same guidelines as those used in the public zones, which is issued to the general public.

F. Standard Elements of Maximum and Minimum temperatures: Expected highs and lows during each of the 12-hour periods along with 24 hour trends for the first two periods.

G. Standard Elements of Maximum and Minimum relative humidity. Expected maximum value at night and minimum value on days during each of the 12-hour periods along with 24 hour trends for the first two periods. .

H. Standard Element of Wind: The general true 16 points of a compass direction and speed of the wind for each period. Maximum and gusty winds should be included...especially high gusty variable winds.

I. Standard Elements in the 3-7 Day Period will include: general sky conditions, chance of precipitation and strong gusty winds(breezy...windy), as well as general maximum and minimum temperatures.

J. Optional Elements: The local optional elements for the WFO Jackson forecast will include:

1. Stag Index
2. Ventilation Index
3. Category Day
4. Stability
5. Wind shifts
6. Precipitation Begins/Ends/Amounts/Duration
7. 500 meter/1700 ft Temperature
8. Afternoon Mixing Height/Transport Direction/Transport Speed in metric and english units
9. Maximum Lvari
10. Dispersion Index
11. SILT/500 MLT(F) which is the Surface Inversion Lifting Temperature/500 Meter Mixing Layer Temperature Degrees.
12. Remarks

The Optional Elements will be explained in Appendix J.

Fire Weather Forecast (product identifier JANFWFJAN; WMO Header FNUS54 KJAN); from the Jackson NWS office are issued twice a day; once by 8 am and again around 2 pm, with additional updates as needed.

If the NWS Gateway to WIMS or the Internet is down...then the update will have to be faxed to all three centers.

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Coordination across county warning areas should be done with the following...Memphis for

North Mississippi...Little Rock for extreme Southeast Arkansas...Shreveport for Northeast Louisiana, New Orleans, and Mobile for South Mississippi as well as Birmingham for East Mississippi. This will be for Fire Weather Watches, Red Flag Warnings, and Fire Danger Statements using 12 planet communication.

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The following primary state and federal agencies will do prescribed burning utilizing our forestry forecasts. There are also private companies that do prescribed burns as well.

1. US Forest Service
2. Regional State Forestry Commissions of Arkansas, Louisiana and Mississippi
3. National Park Service
4. US Department of Interior
5. US Fish and Wildlife
6. County and Local Fire Departments as well as agricultural burning in NE Louisiana

### **Elements of the Fire Weather Forecast**

A Fire Weather Forecast that supplements the public zone forecast is sent into the world wide web of the Internet and WIMS(weather information management system) through AWIPS. The County Warning Area is divided into eight climatological homogenous zones for forestry forecast purposes. The forecast product is derived from the NAM gridded model. The forestry forecasts are adapted by the USFS and the regional state forestry commission of Arkansas, Louisiana, and Mississippi to their own district formats. The normal fire danger season occurs from October through May. Ongoing site preparation and forest management continues throughout the year.

The Fire Weather Program Focal Point is not a full time assignment. The morning fire weather forecast is prepared initially each day by the forecaster using the latest available weather information. The afternoon fire weather forecast is prepared by 2 to 3 pm.

The morning forecast is made up of three periods: Today, Tonight, and Tomorrow. This forecast is followed by an extended period going from day 3 through 7. The afternoon forecast is an update that is prepared with four periods: Tonight...Tomorrow...Tomorrow Night and the following day which is followed by the extended forecast.

Additional sources to determine the fire weather forecast are located in the fire weather section of the Jackson home page. These include:

1. Lower atmospheric stability(Haines Index)...Keetch Byram Index...Fire Danger Index, Maximum Lvorl Index, Vent Index, Silt/500 mlt, and Dispersion Index.

2. Hourly RAWS observations from the internet.
3. Monitor Fire Weather Watches and Redflag Warnings across the South.

The fire weather forecast is issued each day by usually between 5 and 8 am as well as between 2 and 4 pm local time. If there are data collection delays, then the forecast parameters have to be estimated. The forecast will so state and will be sent into the internet and WIMS through AWIPS no later than 815 am or 415 pm.

The centers are open 24 hours a day/7 days a week, including all holidays. We do not give out forestry forecast information by via phone or NOAA Weather Radio. The forecaster can check the internet for the forecast from the forestry section of the Jackson Homepage.

Also any morning updates will be issued based on the following:

1. When bad weather conditions favor a sudden change in stagnation index.
2. When sudden increases and decreases of moisture are staged to move over the region...especially during the very dry high fire danger conditions. In other words big changes on the relative humidity during the 1st period of the fire weather forecast...especially under very dry soil and vegetative conditions.
3. Also especially during very dry periods if heavy rains are on the horizon...in which the current rainfall amounts and duration needs to be changed.
4. If a strong cold front is making up for lost time on its approach with possible gusty winds...which could affect transport wind forecast...mixing heights/temperature...vent index...silt/500 mlt...maximum Ivori index...category day and stability index.

The best way to update the forestry forecast for the first period is to rerun the forecast after the grids have been updated and then send it out with the headline...updated at such time with the following parameters updated and for what zones. All three regional coordination centers needed to be phoned if their areas has been included in the update. Special non-routine forecasts to aid in smoke management, prescribed burning, or ongoing wild fires will be provided by the duty forecaster upon request.

### **...Content and Form of Morning/Afternoon Forestry Forecast...**

The morning/afternoon regional forestry forecast is sent in the following format:

- I. It is divided into 8 homogeneous zones with three morning periods: Today, Tonight and Tomorrow as well as afternoon periods: Tonight, Tomorrow, Tomorrow Night, and Day After .



Each of these zones has a listing of the corresponding counties and their Mississippi, Louisiana, and Arkansas zones. The extended forecast will be in fire weather zone.

**II. Redflag...** This section will cover any rare Redflag Warnings or Fire Weather Watches that are in effect. It will state which part of the region is under the High Fire Danger alert.

**III. Synopsis...** This section will cover the expected weather that will affect the forestry forecast for the next several days. The emphasis will be on any weather that will increase fire behavior parameters for the region...such as low humidities...dry fronts...gusty winds...thunderstorms...severe weather...etc.

**IV. Pollution Data...**The air pollution information is used as a guide for prescribed burning and for issuing burning permits. Each day the data released will be as follows:

- a. Silt/500m mlt...which is the surface inversion lifting temperature and 500m mixing layer temperature. This is defined as the minimum ambient air temperature in which the heating of the earth's surface should allow smoke particles to rise into the atmosphere.
- b. Afternoon mixing height and transport wind speed and direction in both english and metric units.
- c. Afternoon vent index (product of mixing height and transport wind speed) in english and metric units.
- d. Category Day...which depends on the vent index...runs from 1 (poor dispersion) to 5 (good dispersion)
- e. Stability Index...which relates to the stability of the lower part of the atmosphere. It runs from F(stable) to A(very unstable). Helps to determine smoke plume dispersion.
- f. Maximum Lvorl Index...which relates to the maximum value for low visibilities...such as fog.

The pollution data is calculated from the forecast models...which was derived from the previous evening for the morning forecast and during the day for the afternoon forecast.. The forecaster modifies the model data along with the other parameters to meet the needs of our fire weather customers. The weather model calculates these values from a standard plot of the vertical temperature, moisture, and wind profiles. The mixing height is defined as the height above the ground level to which a parcel of air will rise using dry adiabatic thermal bouyancy. The transport wind is the average direction and speed through the mixing layer.

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The MS Forestry Commission for the region will only issue burning permits when the mixing height is at least 500 meters or 1700 feet and the transport wind is 3 to 3.5 meters per second or 6 to 8 mph... It will vary slightly with Arkansas and Louisiana .

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**V. Stag Index...**is a number from 0 to 3 computed from forecast variables that are produced

from the NWS gridded models of the National Weather Service. The index is used by fire managers as a guide to smoke management. Forest Managers are cognizant of the need to occasionally restrict open burning in order to reduce atmospheric contaminants. Therefore, managers use the index as part of the overall picture as input to issuing burning permits. A higher index correlates to greater stagnation...while a lower index of 0 or 1 correlates to greater dispersion of the smoke plume.

**Daytime Scale of 0: Burning permitted from sunrise to sunset.**

**Scale of 1: Burning permitted from 1 hour after sunrise until sunset.**

**Scale of 2: Burning permitted from 2 hours after sunrise until sunset.**

**Scale of 3: Burning permitted from 2 hours after sunrise until 1 hour before sunset.**

**Nighttime Scale of 0: Burning permitted from sunset to sunrise.**

**Scale of 1: Burning permitted until 4 hours after sunset.**

**Scale of 2: Burning permitted until 2 hours after sunset.**

**Scale of 3: No Burning permitted.**

## **VI. Sky Conditions**

The routine morning forestry forecast prepared each day includes the weather parameters below. If two or more sky elements co-exist within one parameter, the dominating one will be forecasted. Sky Conditions Forestry Forecasted Sky Conditions

0/10 to 1/10 opaque clouds	Sunny(day) Clear(night)
Less than 4/ 10 opaque clouds.	Most additional clouds are thin and blocking the sun out. Mostly Sunny or Mostly Clear (Mosunny or Moclear)
(3/10 to 5/10 of sky covered by clouds	Partly Cloudy or Partly Sunny(day) (Ptcldy/Ptsunny)
6/10 to 8/10 of sky covered by clouds	Mostly Cloudy(mocldy)
9/10 or greater of sky covered by clouds	Cloudy
Clouds increasing in coverage	Increasing Clouds(incrg clouds)
Clouds decreasing in coverage	Decreasing Clouds(decrg clouds)

## **VII. Temperatures**

Routine temperatures forecasts will be estimated to a single value for each period for the forestry zones. The maximum temperatures are forecasted for daytime periods and the

minimum for nighttime periods. The minimum temperature usually occurs around sunrise. When fronts are forecast to cross the region, conditions could vary considerably. Actual conditions in the zones may vary even more due to terrain characteristics, especially in clear sky and light wind situations at night.

### **VIII. Relative Humidity**

Relative humidity is that ratio in percent of the amount of moisture in the air at a given temperature compared to the amount of moisture that air could hold if saturated (100%). The daytime humidity will be the minimum expected during the 12 hour period. The nighttime forecast will be the maximum during the 12 hour period. Usually, the minimum humidity occurs at the time of maximum temperature. Maximum humidity occurs at the time of minimum temperature. The forecast will be estimated at a single worst cast scenario value that is expected in the zone. Values can change dramatically in a zone due to frontal passages, vegetation, topography, and weather conditions. It should be understood that forecast humidity accuracy often depends on accurate temperature forecasts. For example, if the maximum temperature is under forecast (too low), the relative humidity will be too high and vice versa.

### **IX. Wind Direction and Speed( AM and PM Winds)**

Wind direction applies to the direction from which the wind will blow and the most likely condition to prevail over the zone using the standard 8 points of a compass. The wind speed is that speed in miles per hour, most likely to occur throughout the zone measured at standard 20- foot level above grassland or forest area. Speeds pertain to one-minute average while gusts pertain to maximum instantaneous values expected. The NAM gridded model calculates the morning and afternoon winds as well as the evening winds.

### **X. Precipitation Types**

1. Rain-General or patchy liquid precipitation- not showery and usually in a stable or neutral temperature lapse rate...small and medium size water drops.
2. Drizzle (Drzl)- General or patchy liquid precipitation in a stable or neutral temperature lapse rate...very small drops.
3. Freezing Rain/Drizzle(FrzgRa/FrzgDrzl)-Liquid precipitation that freezes on upon impact with ground surfaces or vegetation as opposed to ice forming on already wet surfaces. (Explain the depth of expected ice in the remarks section ).
4. Sleet(Slt)- Precipitation in the form of almost clear grains or ice pellets-often mixed with rain or freezing rain.
5. Snow- General or patchy flakes or crystalline precipitation usually not showery.

(Explain the depth of expected snowfall in the remarks section of the forecast)

6. Snow Flurries(Snwflrys)- Showery flakes or small white grains that hardly ever accumulates significantly.

7. Showers(shwrs)- Medium to large drops that usually begin or end abruptly- no thunder heard.

8. Thundershowers(tshwrs)-Same as showers but with thunder.

9. Thunderstorms(tstms)- Heavy or violent downpour or large water drops with strong gusty winds, visible lightning, and small hail.

10. Severe Thunderstorms(svr tstms)- Violent downpours of large water drops, frequent lightning, winds gusts to 58 mph or greater, and/or hailstones 3/4 inch in diameter or larger. Explain Type of severe weather in the remarks section of forecast.

11. Fog- An obstruction to visibility...which is caused by a thick mist. ( Explain in the remarks section the estimated low visibilities and where they will be the lowest.)

### **XI. Precipitation Probability**

1. None - No precipitation expected

2. Isolated or Slight Chance(isold,slgt chc)- Precipitation Chance 20 % or less.

3. Chance (chc)- Precipitation Chance 30 to 50%

4. Likely(lkly)-Precipitation chance 60 to 70%

5. Categorical-Precipitation chance 80 to 100%

The forestry forecast will have an estimated value for each period.

### **XII. Precipitation Duration/Begins and Ends**

Duration will be in hours for each period of the forecast. It will usually be in the following ranges. 1 hour or less...1-2 hours...1-3 hours...2-4 hours...3-5 hours, 4-6 hours, over 6 hours.

Rainfall times will be estimated if a significant area of rain is expected to cross the region.

Otherwise timing will not be filled in for scattered or isolated activity.

### **XIII. Precipitation Amounts:**

Forecasts will pertain to average basin precipitation liquid volume expected over the zone...while precipitation tends to be more uniform over a square area of the size of a forecast zone. The following amounts will be used for wetting rains for 12 hour forecast periods: Less than .10 inch; .10 inch to less than .25 inch; .25 inch to less than .50 inch; .50 inch to less than one inch: one inch or greater. (If greater amounts indicated...explain in the remarks section of the forecast.)

### **XIV. Windshifts:**

Windshifts is defined in a significant change in wind direction of greater than 45 degrees. This will be the case in cold fronts, warm fronts, sea breeze fronts, and prefrontal troughs, or a weak surface trough. Outflow boundaries from thunderstorms or MCSs will not count as a windshift, since they are difficult to predict. (An explanation of the wind shift...should be

mentioned in the remarks section, if significant weather is expected...like with a strong cold front).

#### **XV. Maximum Fire Danger Index**

The meteorological calculation of the minimum humidity and wind speed over a daily 12 hour period. It is the measure of the maximum fire danger, 0 is none, 1 is little, 2 is low, 3 is moderate, 4 is high and 5 is extreme.

#### **XVI. Extended Forecast**

This is a forecast that covers day 3 through 7 of the forecast period. It will be similar to the general public zone forecast product. The extended will be in each fire weather zone.

It will contain the following parameters

1. Generalized Sky Conditions/Weather
2. High and Low Temperatures
3. Surface Winds...including Abreezy or windy
4. The extended will be a copy of the public zones extended.

Fire Managers who need more specific information may place a call to the Weather Forecast Office in Jackson or may wish to make suggestions writing to :

Weather Forecast Office Jackson  
234 Weather Service Drive  
Jackson, Mississippi 39232

#### **IV. Spot Forecasts**

There may be times when a forest fire or prescribed burn is taking place so that a spot forecast may be necessary. We can also do a spot forecast for a state agency when they are working with a Federal Agency or a wildfire is taking place.

It is imperative that as many observations as possible be received from the area that requires a spot forecast. This feature will greatly help to improve the accuracy of the forecast. A spot forecast would require the forecaster to estimate mixing heights, transport wind direction, temperature, wind, humidity, cloud cover, and possibly rainfall amounts. Other items that could be helpful for a spot forecast for 2-3 hour increments are.

1. Satellite for tracking cloud cover...storm systems and approaching cold front...etc.
2. Model soundings to estimate mixing heights and transport winds.
3. Weather data from the site that requested a spot forecast.
4. Using AWIPS, for the location...checking 1 to 3 hourly humidity fields, 1 to 3 hourly surface wind fields from the GFE Grids. 1 or 3 hourly vertical motions that could aid in fire spread rate. Also rainfall amounts.

5. Model soundings in AWIPS that affect the site fire can be very beneficial in determining the presence of an inversion, the low level winds, as well as low level moisture.
6. RUC and VAD Winds can be useful in tracking low level winds and upper level

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systems in vicinity of the fire.

#### 7. Local and National HiRes models

The spot forecast will be filled out under AWIPS header JANFWSJAN. This will be for Prescribed Burns and Wild Fires. Based on the Web Based Spot Forecast concept. The FireWeather Customer will do the following:(Assuming the Southern Region Server is properly functioning)

1. Go to the fire weather section of the website and make a Spot Forecast Request.
2. The customer would fill out the necessary Spot Forecast Form provided...giving information on the location of the prescribed burn or wildfire in progress.
3. The request would be alarmed on AWIPS under JANSTQJAN and the Spot Forecast would be created on AWIPS product formatter or on a PC in the operations area.
4. The requested form would be filled out at the PC...using the web browser at the Spot Forecast section of the home page. and sent back to the web.
5. The fire weather section of the website will update...informing the customer that the product is ready..where our forestry customer would retrieve the product.
6. There will be a map showing the location of the Spot Forecast and the Status of the product(whether it be pending...or completed).

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Depending on customer needs for the Wild Fire situation. We will use the Prescribe Burn spot format or the Nationalized Wild Fire Format...which is not as detailed.

If the Southern Region Server is down then the faxed form for the old method would be done. The Spot Forecast will be filled out on D-1.

- 1.)Name of the fire or other prescribed burn project
- 2.)Control Agency making the request
- 3.)Time and date of the said request
- 4.)Size of the fire or project in acres as well as elevation
- 5.)Type of vegetation that is being burned
- 6.)Exposure of fire(whether its on a hill or incline)
- 7.)Whether it is a ground fire or crown fire(tree top to tree top)
- 8.)Weather conditions at the fire from a nearby station such as:

- A. 20 foot wind direction and speed
- B. Dry/wet bulb temperatures

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- C. Relative humidity and dewpoint
- D. Any close showers or storms

The forecast section will need to be filled in with the following information:

- 1 ) Weather Synopsis/Extended Outlook.
- 2.) Forecast material 3 periods at 2-3 hour intervals...for today...tonight...with a general outlook for the daytime tomorrow.
- 3.)Temperatures
- 4.)Relative Humidity
- 5.)Chance of Wetting Rains
- 6.)Mixing Heights/Transport Winds
- 7.)Sky Conditions
- 8.)Surface Winds
- 9.)Stagnation Index...if requested...(from AM forestry)

The forecast would be faxed to the requesting agency. Once again the only times that we would do it for the State Forestry Agencies in the region.

- a. A wild fire in progress
- b. State and Federal Agencies were working together on a project.

#### General Spot Information

There are two types of Spot Forecast Products (commonly referred to as Spots). The first one is issued to support land management personnel for activities associated with Prescribed Burns. The other is issued to support fire suppression activities of on-going wildfires. The main difference between the two is that the format and content of a Spot Forecast for a wildfire is standardized nationally, while the format for the Spot Forecast for a prescribed burn is determined by the local users and will vary from office to office.

Before any Spot Forecast is issued the requesting agency should provide information about the location, topography, fuel type(s), elevation(s), size, ignition time, and a contact name(s) and telephone/fax numbers of the responsible land management personnel. Also, representative observations at or near, the site of the planned prescribed burn or wildfire should be available to the responsible WFO prior to the issuance of the Spot Forecast by the web. In case of a wild fire or a prolong burn, updated observations and information should be provided to the NWS during the course of the event. Spots should be updated whenever they become, or expected to become unrepresentative of the current forecast.

The general policy of providing spot forecasts is established by the local NWS offices and the

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local customers. The specific contents, issuance frequency, means of communication, and other details of distribution will be determined by local customers and NWS personnel at the time of the customers request for spot service. Spot forecasts will include specific weather information giving into account the various parameters to the incident area. Critical weather element thresholds for the Spot Forecast will be determined by fire behavior analyst or other fuels/fire behavior expert who will define the range of wind, relative humidity, and any other factors which may cause significant changes to fire behavior. In the case of a prescribed burn, these thresholds are often defined in the Burn Plan, which is normally developed and approved well before a Spot forecast is requested.. In most cases, such information can be obtained directly from the on-site requester

Spot forecasts may be sent to the requester through the mutually-agreed upon distribution method. Requesters may communicate via a cell phone. In some cases, spot forecasts can be requested through a local Fire or Emergency Dispatch system. In other cases the fax may be the method to transmit...if the Southern Region Internet Server is down. Standardized Spot Forecast for Wildfires(also for HAZMAT and Search and Rescue)

FNUS 74 KJAN DDHHMM

FWSJAN

SPOT FORECAST FOR (location of name of wildfire and requesting customer...ie USFS)

ISSUED BY THE NATIONAL WEATHER SERVICE JACKSON,MS

TIME-DATE(OCT 4, 2012)

VALID UNTIL <24 HOURS AFTER ISSUANCE>

IF CONDITIONS BECOME UNREPRESENTATIVE CONTACT YOUR NATIONAL WEATHER SERVICE

.HEADLINE...(if a Redflag Warning/Fire Weather Watch(JANRFWJAN) a headline is Mandatory. Otherwise a headline should be added at every issuance.

Ex. SPOT FORECAST FOR (NAME OF WILDFIRE)

.DISCUSSION...Brief Weather Summary affecting Fire Operations

.FIRST PERIOD

SKY/WEATHER

TEMPERATURE

HUMIDITY

WIND...(20 foot level)

OPTIONAL ELEMENTS...(as required by our Area/Visiting Customers in fire suppression or an IMET...Both may be from another part of the country)

.SECOND PERIOD

SKY/WEATHER



TEMPERATURE  
HUMIDITY

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WIND...(20 foot level)  
OPTIONAL ELEMENTS...(as required by our Area/Visiting Customers in fire suppression or an IMET...Both may be from another part of the country.)  
.THIRD PERIOD  
SKY/WEATHER  
TEMPERATURE  
HUMIDITY  
WIND...(20 foot level)  
OPTIONAL ELEMENTS...(as required by our Area/Visiting Customers in fire suppression or an IMET...Both may be from another part of the country.)

#### Spot Forecasts Products Issued for Prescribed Burns

Spot forecasts will be prepared in a format requested by the local customer which can be in graphical or tabular form. In our forecast area we use the tabular format, which may contain any of the following elements as requested by our customers brief weather discussions, forecast ,weather, surface winds,(including wind shifts), maximum/minimum temperatures and humidity. Upon customer request, other weather elements such as transport winds, mixing heights, stag index, chance of wetting rains, extended 18-24 hour outlook , etc may be provided. Since spots are generally for small geographical areas. Areal weather descriptors(such as scattered showers, isolated showers,etc.) should not be used. The timing of significant events is important and in the case of wind shifts, extremely critical. Wind forecasts should clearly indicate the level of the wind forecast(i.e. eye level, 20-ft level).An example of a Spot Forecast Form for a Prescribe Burn:

#### EXAMPLES OF THE 2 TYPES OF WEB BASED SPOT FORECASTS

...Example of a Spot Forecast for a Prescribed Burn...

FNUS 74 KJAN DDHHMM

FWSJAN

SPOT FORECAST FOR 4 MILES NE OF OVETT,MS...USFS  
ISSUED BY THE NATIONAL WEATHER SERVICE JACKSON,MS  
915 AM JANUARY 9, 2014

VALID UNTIL 915 AM JANUARY 10, 2014

IF CONDITIONS BECOME UNREPRESENTATIVE CONTACT YOUR NATIONAL WEATHER SERVICE SPOT FORECAST FOR THE TIGER CREEK DRAINAGE  
PRESCRIBED BURN

DISCUSSION...BRIEF DISCUSSION AFFECTING FIRE OPERATIONS.

TIME	10 AM	12PM	3 PM	6PM	9PM	12 AM	3 AM	6AM
SKY/WEATHER	PARTLY CLOUDY / MOSTLY CLEAR							
TEMP	60	65	69	61	60	56	54	52

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RH	75	68	58	80	91	95	96	98
WINDSPEED(20ft)	07	12	14	10	8	8	6	4
WIND DIRECTION	230	230	230	200	210	230	250	220
PROB OF PRECIP	0	10	20	30	30	10	0	0

(Optional parameters)

(Stag Index)

(Mixing Heights)

(Transport Winds)

EXTENDED FORECAST (6-12 PM) SKY: MOCLDY....TEMP: 52-62...RH: 60-65% WIND: N 10-20 MPH...REMARKS: NO RAIN NOTE: BE SURE TO CALL THE OFFICE WHEN REQUESTING A SPOT FORECAST.

...Example of a Spot Forecast for a Wild Fire...

FNUS 74 KJAN DDHHMM

FWSJAN

SPOT FORECAST FOR 4 MILES NE OF FOREST,MS...USFS AND MFC

ISSUED BY THE NATIONAL WEATHER SERVICE JACKSON,MS

930 AM OCTOBER 13, 2013

VALID UNTIL 930 AM OCTOBER 14, 2013

IF CONDITIONS BECOME UNREPRESENTATIVE CONTACT YOUR NATIONAL

WEATHER SERVICE SPOT FORECAST FOR THE BIENVILLE WILDFIRE

FIRE WEATHER WATCH IS IN EFFECT DISCUSSION...BRIEF DISCUSSION AFFECTING FIRE OPERATIONS.

TIME	10 AM	12PM	3 PM	6PM	9PM	12 AM	3 AM	6AM
SKY/WEATHER	BECOMING CLOUDY/ BECOMING PARTLY CLDY							
TEMP	60	65	69	61	60	56	54	52
RH%	65	38	20	40	60	65	65	75
WINDSPEED(20ft)	17	15	23	21	18	12	11	9
WIND DIRECTION	230	230	230	200	210	230	250	220
PROB OF PRECIP	0	0	0	0	0	0	0	0

(Optional parameters)

(Stag Index)

(Mixing Heights)

(Tranports Winds)

EXTENDED FORECAST (6-12 PM) SKY: MOCLDY....TEMP: 52-62...RH: 60-65% WIND: N  
10-20 MPH...REMARKS: NO RAIN

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NOTE: BE SURE TO CALL THE OFFICE WHEN REQUESTING A SPOT FORECAST

## V. NFDRS Single Station Forecasts

This product measures wildfire danger at RAW Sites. NFDRS observations are taken once per day. NFDRS forecasts are not intended to be site specific...but an overview of the general fire danger. Effective fire suppression planning depends heavily on NFDRS because it is an objective tool for predicting the difficulty of suppression a wild fire. The NWS role in NFDRS is forecasting weather input which, combined with customer input, allows NFDRS software to predict the next day's fire danger indices. Daily weather observations entered into NFDRS by the fire agencies form the basis of the forecast input by the NWS. Each NFDRS site is located at a spot which is representative of the terrain and fuel types dominant in that area.

Here is the list of the following NFDRS stations in WFO Jackson's Forecast Area:

- |                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| 1. 226102...Bude Station in Lawrence County          | 9. Covington Station...226501   |
| 2. 225502...Copiah Station in Copiah County          | 10. Lauderdale Station...225301 |
| 3. 223301...Delta Station in Sharkey County          | 11. Warren Station...224201     |
| 4. 224403...Ridgeland Station in Madison County      | 12. Holmes Station...223501     |
| 5. 227202...Marion Station in Marion County          | 13. Neshoba Station...224601    |
| 6. 225101...Bienville Station in Scott County        | 14. Forest Station....227401    |
| 7. 224101...Noxubee NWR in Noxubee County            |                                 |
| 8. 037401...Felthensal NWR in Ashley County Arkansas |                                 |

Example of NFDRS Single Station Forecast

FWMJAN

FCST,226102,030514,13,9,85,55,5,4,SW,9,M,85,64,100,62,8,2,N  
FCST,225502,030514,13,9,78,65,5,4,SW,9,M,80,64,100,67,8,3,N  
FCST,223301,030514,13,9,73,84,5,4,SW,11,M,77,63,100,70,8,6,N  
FCST,224403,030514,13,9,76,69,5,4,SW,9,M,78,62,100,70,8,4,N  
FCST,227202,030514,13,9,85,58,5,4,SW,9,M,85,65,100,63,8,1,N  
FCST,225101,030514,13,9,78,68,5,4,SW,9,M,80,62,100,67,8,4,N  
FCST,224101,030514,13,9,78,67,5,4,SW,8,M,81,63,100,68,8,4,N  
FCST,037401,030514,13,9,77,65,4,3,SW,9,M,82,67,100,69,7,3,N

Format for NFDRS

forecast...FCST,226102,030514,13,2,83,65,1,3,S,11,M,83,68,100,65,0,0,N

1. FCST...Forecast Point

2. 226102...NFDRS Station ID(22...State 61...County 02 Station ID)
3. 030514...Tomorrow's Forecast Date
4. 13...Local LST for Tomorrow's Forecast (always 1300)

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5. 2...Weather valid at 1300 LST Tomorrow...0 (Clear) 1 (Scattered Clouds) 2 (Broken Clouds) 3 (Overcast Clouds) 4( Foggy) 5 (Drizzle) 6 (Raining) 7 (Snowing) 8 (Showers at or near Station) 9 Thunderstorms
6. 83...Current Temp at 1300
7. 65...Current Relative Humidity at 1300
8. 1...LAL1 Lightning Activity Level from 1400 to 2300 LST
9. 3...LAL2 Lightning Activity Level from 2300 to 2300 LST (1 none...2 isolated...3 few...4 scattered...5 numerous...6 which is high based storms out west...which we will not deal with in the south.)
10. S,11...Wind...Windspeed valid at 1300 LST
11. M...Missing 10 hr Time lag fuel moisture(always missing)
12. 83...Maximum Temperature for Tomorrow
13. 68...Minimum Temperature for Tomorrow
14. 100...Maximum Humidity for Tomorrow
15. 65...Minimum Humidity for Tomorrow
16. 0....Precipitation Average Duration from 1400 to 0500 LST
17. 0....Precipitation Average Duration from 2300 to 2300 LST
18. N....Y or N...This indicates whether liquid water will be on the fuels at 1300 LST.  
Use with CAUTION- a Y will reset all the indices to zero. We will keep the value at N in our product for all stations.

## **VI. Red Flag Program**

The purpose of the Fire Weather Watch and Red Flag Warning is to alert the public and land management agencies of developing weather conditions that, when combined with critically dry wildland fuels, could lead to dangerous wildfires...which will be issued using GHG and will be distributed under AWIPS Pil JANRFWJAN. Also will be headlined in the Forestry Forecast. Fire Weather Watch...will be issued 12 to 48 hours of the expected onset of Redflag Warning Criteria.

Red Flag Warning...will be issued when warning criteria is 12 to 24 hours or less. A warning will have its own section in the AFD. Instead of Fire Weather it will be(.Red Flag Warning...) along with a brief synopsis of the event.

### **Criteria for Red Flag Events in Mississippi:**

Fire Weather Watches/Red Flag Warnings are issued when the combination of dry fuels and

weather conditions are such that extreme fire behavior or ignition is occurring or is expected to occur. Forecasters will coordinate local fire and land managers(Mississippi Forestry Commission/US Forest Service) to discuss the issuance of a Fire Weather Watch or Red Flag Warning. In addition, issuing offices should coordinate with adjacent weather offices.

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Below are some of the criteria to consider when evaluating Fire Weather Watch/Red Flag

Conditions: for Mississippi as of May 2008

1. Humidity less or equal to 25%.
2. 20 foot wind speed of greater or equal to 15 mph

For Louisiana Fire Weather Watch/Red Flag Conditions:

1. Keetch-Byram Drought Indices of greater than 700.
2. Relative Humidity less than 25%
3. 20 foot wind speed greater than or equal to 14 mph.

For Arkansas Fire Weather Watch/Red Flag Conditions

1. Relative Humidity less than 25%
2. 20 foot wind speed of greater than or equal to 14 mph.
3. Fuels critically dry, 10 hour fuels less than 10 percent

Be sure to consult the state and federal agencies for the region where you may want to issue a Redflag Warning or a Fire Weather Watch. Use the fax feature on AWIPS in order to transmit the product. Also please coordinate with our neighboring Weather Forecast Offices to let them know of the fire danger products that are in effect.

## **Fire Danger Statements**

The office will also issue Fire Danger Statements. This product is issued under rare circumstances of extremely dry or drought conditions for the entire or part of the region (AWIPS header JANSPSJAN). Distribution will be over NOAA Weather Radio, and Internet.

The statement will have the following items.

1) Highlight one of these statements

...FIRE DANGER INCREASING IN (Area to be Named)

...HIGH FIRE DANGER CONTINUES in (Area to Named)

We will not use the term extreme.

2) Elaborate on the situation with a direct quote of the appropriate Fire Control Agency(State or Federal). The source of the quote will be clearly identified in the statement.

3) Indicate any changes(or no changes) in the weather situation expected over the next few days relative to the fire danger situation. We will leave fire behavior as far as rate of fire spread to the fire agencies.

4) Request for individual cooperation. The state or federal agency request that caution be

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exercise to help prevent forest and grass fires.

5) The statement will also mention burning bans that could be in force for a series of counties over portions of the state or a special statewide burning ban that is imposed by the governor.

6) Fire Danger Statements shall be issued only at the request of the forestry services...especially the state forestry agencies...since they cover the public lands of the state. We are responsible for issuing Fire Weather Watches and Red Flag Warnings.

7) The Fire Danger product if so requested by the state and federal agency should be issued only from 10 am to 6 pm with a 15 minute interval on NOAA Weather Radio daily until sufficient rains can lower Fire Danger Potential.

## **VI. Special Meteorological Services**

Air Transportable Mobile Unit(ATMU)/Incident Meteorologists(IMETS)

The Air Transportable Mobile Unit(ATMU) must be set up and operated by an ATMU certified meteorologist (called an incident meteorologist or IMET) working closely with a Fire Behavior Analyst(FBA) or Planning Section Chief. The Fire Weather Focal Point or Meteorologist-in-Charge at NWS offices should be made aware of the need for an ATMU and IMET services in their county warning area(CWFA). Requests for ATMUs and IMETs should be made through the US Forest Service Regional Dispatch. Requests for Mississippi should come from the Southern Area Coordination Center(SACC) in Atlanta, Georgia. Coordination of the state or federal agencies that are making the request...has to be done through the National Interagency Fire Center at Boise, Idaho. Due to the density of weather observations in the region this unit is normally not required and usually only dispatched to the western portions of the United States in fighting remote location fires.

This NWS directive supersedes NWSI 10-402, "Fire Weather Services On-Site Support" dated October 4, 2006.

Signed by David B Caldwell Director of office of climate/Water and Weather Services.
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Definitions of Incident Meteorologist Support Types, Services and Certification.

1 Incident Meteorologist (IMET). An IMET is a National Weather Service (NWS) forecaster who participates in a voluntary program to provide detailed decision support services to fire and other incident management teams. While the program is voluntary, the job can be mentally and/or

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physically demanding and the work environment can be stressful, consisting of long hours working and/or living in outdoor conditions.

On-site Services. Non-routine decision support services available from NWS offices with a designated Type 1 IMET. The Type 1 IMET is dispatched as part of an IMT upon request of federal, state, tribal, or local government emergency response agencies in support of wildfires or other events that threaten life or property.

Off-site Services. Routine and non-routine decision support services available from NWS offices and IMET services to EOCs, ACs, and JFOs. The key distinction for this type of service is that the work is performed in an office environment and does not require field work.

Decision Support Services. Routine and non-routine forecasting services available from (NWS) Offices. Services include site specific weather forecasts, briefings or other services as needed.

Type 1 IMET.... Can support any Wildland Fire or non-Wildland Fire incident at any location including Incident Command Posts. Can support wildland fire IMTs. Equipped with all Hazards Meteorological Response System (AMRS). Full onsite operations including communications. Also equipped with Personnel Protective Equipment (PPE) and camping gear for extended missions.

Type 2 IMET... Can support any wildland fire or non-wildland fire incident only at an Emergency Operations Center (EOC), Area Command or Joint Field Office. Equipped with laptop, printer and wireless internet card. Does not have PPE or camping gear.

Type 3 IMET... Can support any non-wildland fire incident only at an Emergency Operations Center (EOC), Area Command or Joint Field Office. Can support any non-wildland fire type incident management team. Equipped with laptop, printer and wireless internet card. Does not have PPE or camping gear.

Certification of IMETs. The NWS Regional Headquarters, through the local Meteorologist-in-Charge (MIC), will designate as IMET candidates those persons qualified to provide on-site services in an Incident Command System. Training and certification

requirements are listed under Instruction 10-405 (Fire Weather Services Training and Professional Development). The NFWOC has final determination on the IMET roster. The IMET maintains proficiency in providing on-site forecast services and should participate in training conducted jointly by the NWS and the users. Regional program managers ensure IMET

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meteorological support equipment familiarization is scheduled as needed and designated IMETs remain certified.

Only trained Type 1 IMETs will operate the AMRS, and AMRS will only be dispatched to an incident when a certified IMET is requested. The NFWOC in coordination with the Regional Program Managers will be responsible for positioning the AMRS at various NWS offices around the country. The NFWOC has final determination on the placement of AMRS and ATMUs.

Availability of IMETs. All Regions will ensure there are a sufficient number of trained IMETs to meet normal requests for on-site services. By January 31<sup>st</sup> of each year, the Regions will advise the NFWOC in Boise, ID, of the following:

- a. Name and location of currently certified IMETs.
- b. A 24-hour telephone number where the IMET's home office can be reached.

The Regional offices will also keep the NFWOC up-to-date on any changes in the status of certified IMETs. The IMET should always be prepared to serve on an incident, especially during the normal regional fire season. Availability of the IMET will be determined by the local MIC and the IMET. When an IMET knows in advance that he/she will be unavailable for reasons such as annual leave, station staffing shortages, or personal needs, the MIC and the IMET will note his/her unavailable status on the IMET non-availability roster. This roster is posted on an internal NWS website. The NFWOC will ensure all IMETs are provided the URL and other pertinent information for this site annually. This roster will be used by the NFWOC to determine IMET non-availability for dispatch when any office is unable to fill a request. During critical wildfire periods, usually when the National Interagency Fire Center (NIFC) is in National Preparedness Level 4 or 5 for an extended period, Regional Headquarters and/or National Weather Service Headquarters (NWSH), may require all IMETs be made available for immediate dispatch, which will include removing restrictions on IMET availability due to the IMET working a midnight shift. Annual reminders of the importance of IMET availability will be issued by the NWS Assistant Administrator or his/her designee.



2. IMET Request and Dispatch for Land Management Agencies. Request and dispatch of IMETs and equipment should be accomplished through the National Resource Coordination System.

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2.3 IMET Dispatch Coordination and Notification. Coordination for effective IMET deployment is very important in maintaining a viable system of response.

- a. IMETs keep the MIC/supervisor informed of their availability for on-site support.
- b. MICs/Supervisors of offices with IMETs will report all IMET operational status changes immediately to the NFWOC or acting NFWOC in Boise and the appropriate Regional Program Manager/center manager.
- c. Regional Headquarters/centers will work with the NFWOC to ensure sufficient on-site capability. To help meet this requirement, Regional Program Managers/center supervisors should keep the NFWOC up-to-date on any known status changes of their region's/center's IMETs.

2.4 Forecast Duties. Forecast duties will vary with incident management team requirements, but the IMET should expect to provide daily weather forecasts for the incident, participate in shift briefings, planning and strategy meetings, and coordinate daily with the local WFO and/or with other IMETs at nearby incidents. The IMET will set-up, operate, and maintain the AMRS. The IMET is responsible for keeping his/her MIC/supervisor and the NFWOC informed of his/her status while on the incident.

2.5 Duration of Dispatches. The amount of time an IMET will be needed on an incident varies, ranging from a few days to several weeks. As a matter of safety, length of individual IMET dispatches, and hours worked per day, will mirror national wildland firefighter policy as set forth in the Interagency Incident Business Management Handbook. The NFWOC will coordinate the rotation of IMETs to incidents exceeding two weeks. There should be a 1 to 2 day overlap between the departing IMET and his or her replacement. The outgoing IMET is responsible for briefing the replacement IMET, ensuring that he or she is fully integrated into the incident command system. The NFWOC will maintain a status report of the condition and location of all AMRSs, ATMUs and IMETs and report that status to the regions, affected centers and the NFWPM. This will include any change in office capabilities to meet IMET support services.

## **VII. Fire Weather Training**

National Weather Service fire weather meteorologists are available to assist fire control

agencies with training at fire behavior school and other related courses. Requests for assistance should be forwarded to the Meteorologist-In-Charge(MIC) at the respective NWS office(s) by written letter. It is the responsibility of the Fire Weather Focal Point to keep the office trained

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and updated on fire weather forecasting and issues. National Weather Service fire weather meteorologists are available to assist fire control agencies with training at fire behavior school and other related courses. Requests for assistance should be forwarded to the Meteorologist-In-Charge(MIC) at the respective NWS office(s) by written letter.

## **VIII. Fire Weather Services Training**

This directive supersedes NWSI 10-405, "Fire Weather Services Training and Professional Development," dated October 12, 2012.

/signed/ March 13, 2014
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Christopher S. Strager Date Acting Director, Office of Climate,  
Water, and Weather Services

Fire Weather Forecasters. Any NWS meteorologist producing any of the core suite of fire weather products is trained as a Fire Weather Forecaster. Forecasters fulfill the following requirements to work as a Fire Weather Forecaster:

- a. Fire Weather and Wildland Fire Behavior Baseline Knowledge. Complete the National Wildfire Coordinating Group's (NWCG) S-290 "Intermediate Wildland Fire Behavior", either by computer based training or residence course.
- b. Emergency Management Courses. Complete IS-100.b, "Introduction to the Incident Command System (ICS), ICS-100." Complete IS-700.a, "National Incident Management System (NIMS), An Introduction". Completion of these emergency management courses is required within 6 months of this directive going into effect.
- c. Local Training. Complete local training as specified by the local and/or regional Fire Weather Program Leader (FWPL). This training should focus on: (1) the effects of local terrain on fire weather parameters and fire behavior, with an emphasis on wind; (2) local fire weather forecast techniques; (3) local fire season climatology; and (4) Remote Automated Weather Stations (RAWS) observations (where available).

d. Products and Services. Be familiar with all NWS fire weather products and services and

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become proficient in the preparation and dissemination procedures for those products, per NWS Policy Directive 10-4 and associated Instructions.

The Meteorologist-In-Charge (MIC) and the appropriate Regional Headquarters are responsible for ensuring fire weather forecasters are properly trained. At a minimum, forecasters will review the Fire Weather Annual Operating Plan and remain proficient in issuing fire weather products each year. Additional requirements to achieve and maintain proficiency are allowed with Regional Headquarters' approval.

Fire Weather Program Leaders. MICs of NWS Weather Forecast Offices (WFOs) assigned the responsibility to provide fire weather services will designate a member of the staff as the FWPL. The MIC will ensure the FWPL is provided adequate time for personal and staff training, professional development, and user-agency liaison and assistance activities. The FWPL is traditionally a WFO meteorologist; however the FWPL may be another WFO staff member with Regional Headquarters approval and assurance from the MIC that the non-meteorologist FWPL meets all training requirements. The MIC, Science and Operations Officer (SOO) and FWPL will be responsible for training and development of fire weather forecasters and assisting the Incident Meteorologists (IMETs) (if one is assigned to the WFO) as necessary. The FWPL need not be an IMET and vice-versa. In addition to fire weather related training, the FWPL's duties may include developing and implementing new forecast products and techniques, and conducting climate and fire weather related studies. The extent of the duties of the FWPL will be determined by the depth of the local fire weather program requirements.

4.1 Initial Type 1 IMET Certification. To be certified initially as an IMET, the meteorologist will have at least attained the level of General Forecaster and will either be stationed in an office that has a national All Hazards Meteorological Response System (AMRS) or stationed in a NWS office that is collocated in the same city as an office that has an AMRS. However, an Intern may complete any available training such as Cooperative Program for Operational Meteorology, Education and Training (COMET®) modules and NWCG fire courses, and may take a familiarization trip to a fire with Regional Headquarters and Incident Commander approval. The NFWOC has the

discretion to waive the co-location of AMRS equipment requirement. The IMET trainee will acquire a high level of knowledge of fire weather meteorology and fire behavior. This includes: advanced knowledge of complex

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terrain and its impacts on fire weather parameters; mesoscale meteorology; intermediate to advanced knowledge of climatological patterns associated with fire activity; and intermediate to advanced knowledge of fire behavior, including knowledge of fuels and fire climatology. The prospective IMET will meet the following requirements in addition to all the requirements for FWPLs (Section 3):

Type 1 IMET Re-certification. The status of IMET certification will be reviewed annually by the respective Regional Headquarters and MICs prior to delivering the pre-season list of certified IMETs to the NFWOC (required by January 31<sup>st</sup> of each year). Delivery of IMET names to the NFWOC implies each IMET has met the ongoing re-certification criteria.

Type 1 IMET Re-certification Criteria. To remain certified as an IMET, the IMET will satisfy the criteria below. Please note that refresher training identified as “mandatory” will be noted as such: a. Be stationed at an office that has an AMRS or collocated in the same city as an office that has an AMRS. The NFWOC has the discretion to waive this requirement.

- b. Have responded to a wildland fire incident dispatch as a certified IMET using the AMRS within the previous three years.
- c. Attend annual fireline safety refresher training provided by the wildland fire agencies. This course is commonly known as the RT-130 Annual Fireline Safety Refresher Course.
- d. Complete any offered annual IMET equipment deployment refresher training identified as mandatory.
- e. Complete any offered annual IMET NOAA mandated safety refresher training.
- f. Complete any offered annual IMET business practices refresher training identified

Lapse of Certification. If a previously certified IMET does not meet the criteria, re-certification can occur by completing a dispatch training session at an incident with a certified IMET. For a dispatch training session, the certified IMET will determine the necessary length of dispatch for re-certification. The certified IMET will notify the Regional Headquarters and the MIC if and when he/she deems re-certification should be approved. The IMET seeking re-certification does not have to formally complete a

Task Book, but the required tasks should be reviewed for re-certification purposes. The respective Regional Program Manager or MIC should notify the NFWOC of any changes in IMET certification. If an IMET is transferred to an office that does not have an AMRS, that Type 1 IMET can become a Type 2 IMET if they so choose.

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## **IX Procedures for obtaining and billing**

Costs to customer agencies will be calculated on the basis of expense reports and submitted to the NWS regional headquarters by field personnel. Copies of expense reports will be forwarded to appropriate customer agencies by NWS regional headquarters. This procedure will enable agencies to determine costs to be reimbursed during a given fiscal year. Billing of user agencies will be accomplished by NWS regional submission of appropriate expense reports to the NOAA Reimbursable Division. Bills will include a statement of services, including dates and locations. All questions relating to billing procedures, charges, current costs, and individual expense reports should be directed to the appropriate NWS regional contact or the NWS Technical Monitor.

Southern Region Fire Weather Meteorologist(W/SR11x1)

Paul Witsaman paul.witsaman@noaa.gov

Technical Monitor for NWS

The NWS Technical Monitor for this Agreement shall be:

NOAA/National Weather Service

1325 East-West Highway

Silver Spring,MD 20910

## **Appendix A**

### **NATIONAL AGREEMENT FOR METEOROLOGICAL SERVICES OF AGENCIES WITH LAND MANAGEMENT AND FIRE RESPONSIBILITIES**

#### **I. Introduction**

This agreement is between the National Weather Service(NWS) and agencies with land Management and fire management responsibilities signatory to this agreement. They are referred to in this agreement as NWS and CUSTOMER AGENCIES, respectively.

The Customer Agencies are responsible for the maintenance, improvements, and protection of the wild lands, of owned or held in trust by the United States. Accurate and timely weather information is required to manage effectively and efficiently this valuable resource. It is with this knowledge that this Agreement is entered into. Its purpose is to combine resources so as to best serve the needs of the public and to fulfill the obligations of the respective agencies.

#### **II. Authority**

This agreement is authorized under the Economy Act(31 U.S.C.686;15U.S.C.313;49U.S.C.1463) and the Cooperative Forestry Assistance Act of 1978(16U.S.C.2101),etc.

#### **III. Objectives**

The objectives of this Agreement are to identify meteorological services to be provided, establish the interagency relationships, and define financial and other obligations of the NWS and Customer Agencies.

#### **IV. Responsibilities**

##### **1.1 National Weather Service**

1.1 Basic Meteorological services will be provided during normal working hours in accordance with the Operating Plans for designated NWS offices to the extent of the NWS fire weather resources. NWS regional headquarters will identify to the Customer Agency Headquarters a list of the designated for weather offices on an annual basis. These services will be made available without cost and may include:

##### **1.1 Routine Daily Fire Weather Forecasts**

##### **1.2 Outlooks and Discussions**

##### **1.3 Weather Observations**

- 1.4 Red Flag Forecasts
- 1.5 Spot Forecasts
- 1.6 Prescribed Burn Forecasts
- 1.7 Smoke Management Forecasts and Information

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- 1.8 Consultation and Technical Advice
- 1.9 Amendments / Updates
- 1.10 NFDRS Single Station Forecasts

## **1.2 Fire Weather Training**

The NWS recognizes the need for training in fire weather meteorology for NWS forecasters. To the extent of available resources, the NWS will meet this need.

## **1.3 Special Meteorological Services**

These services will be provided by designated NWS offices on a reimbursable basis as stated in Section IV B.

- 1.3.1 Weather observer training
- 1.3.2 Weather observation station visitations
- 1.3.3 Participation in Customer Agency training activities
  - 1.3.3.1 Course development carried out at Customer Agency facilities
  - 1.3.3.2 Classroom training
- 1.3.4 On-site meteorological services
- 1.3.5 Other special services

### **1.1 Customer Agencies**

The following services and resources will be provided by Customer Agencies

#### **0.1 Fire-management computer systems**

Where existing fire management computer systems are locally available, access to the system will be provided.

## **2.0 Fire Weather Observations**

- 2.1 Provide daily surface weather observations and enter data into fire management computer systems.
- 2.2 Provide all equipment, maintenance, and inspection of weather observing sites.
- 2.3 Meet all travel and per diem costs associated with Customer Agencies requests for visits of NWS personnel to weather-observing sites.
- 2.4 Provide for collection of remote automatic weather systems data.
- 2.5 Provide observations for site-specific and other special forecasts.

## **3.0 On-site meteorological support**

- 3.1 Meet costs directly associated with on-site meteorological support by NWS personnel. This includes costs incurred by the backup NWS office.

3.2 Provide logistical and weather observations support to NWS at on-site operations.

3.3 Provide access to telecommunications services where available.

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#### **4.0 Training**

4.1 Meet per diem and travel costs for NWS personnel participating in the conduct of the Customer Agency training.

4.2 Provide technical assistance, instruction, and supporting material for NWS-sponsored fire weather training sessions.

#### **5.0 Other Special Services**

Customer Agencies will provide logistics support and meet all overtime, travel, and per diem costs of NWS personnel associated with the provision of all other special services.

#### **6.0 Joint Responsibilities**

NWS and Customer Agencies shall prepare an annual Operating Plan for individual fire weather offices areas of responsibility. This plan will identify the basic weather services covered under Section IV.

Procedures for requesting services will be specified in Operating Plans for each NWS fire weather office.

### **Appendix B Billing Procedures**

Costs to be recovered from Customer Agencies will be calculated on the basis of expense reports submitted to the NWS regional headquarters by field personnel. Copies of expense reports will be forwarded to appropriate Customer Agencies by NWS regional headquarters. This procedure will enable agencies to accurately determine costs to be reimbursed during a given fiscal year. Billing of Customer Agencies will be accomplished by NWS regional submission of appropriate expense reports to the NOAA Reimbursable Division. Bills will include a statement of service rendered, dates it was provided, and location where provided. All questions relating to billing procedures, charges, current costs, and individual expense reports should be directed to the appropriate NWS regional contact or the NWS Technical Monitor.

### **Appendix C Amendments**

Upon written notice. The terms of this Agreement are subject to amendment at any time by mutual agreement of the parties. The signatory agencies agree to consider expansion of this Agreement to cover areas of mutual concern, e.g. changing technology and improved procedures, as opportunities for such cooperation become available.



## **Appendix D Terms of National Agreement**

1. The terms of this Agreement shall become effective upon execution by NWS and any or all Customer Agencies and shall remain in effect until such times as the

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Agreement is terminated by mutual agreement. Any agency may withdraw at any time by ninety(90) days written notice to all parties.

2. This Agreement does not constitute a financial obligation for any party in excess of appropriations authorized by law and administratively allocated for the purposes intended.

Technical Monitor for NWS

The NWS Technical Monitor for this Agreement shall be:

Fire Weather Program Manager, W/OM12

NOAA/National Weather Service

1325 East-West Highway

Silver Spring, Maryland 20910

### **Definitions:**

When the following terms are used in this Agreement or in an operating plan, such terms will have the meanings stated below.

#### **1. Fire Weather Office Operating Plan**

A procedural guide which describes the services provided within the area of a fire weather offices responsibility.

#### **2. Basic Meteorological Services**

Basic, meteorological services are those state-of-the-science meteorological forecasts, warnings, observations, and statements produced in a designated NWS Fire Weather Office during normal working hours.

#### **3. Fire Weather Zone or District**

A fire weather zone or district is the area of routine responsibility as defined by NWS. This area is usually defined by climatological factors, but may be modified somewhat to the administrative boundaries of the Customer Agencies.

#### **4. Normal Working Hours**

Normal working hours are defined in the Operating Plan, but usually cover 8-hour workdays Monday through Friday...except during a fire season. In our County Warning Area the fire season is generally all year around and provide services on workdays Monday through Sunday.

#### **5. Prescribe Fire**

Prescribe fire is a fire burning in wildland fuels according to a planned prescription and confined within planned boundaries for the purpose of achieving specific objectives of resource management. (Prescribe burning is the practice of prescribed fire use.)

## **6. Red Flag**

Red Flag is a program which highlights the onset of critical weather conditions to extensive Wildfire Occurrences.

## **7. Special Meteorological Services**

Meteorological services uniquely required by Customer Agencies which can not be

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provided at a designated NWS fire weather office during normal working hours.

## **8. Spot Forecasts**

Spot forecasts are site-specific weather forecasts. They are issued upon request of Customer Agencies for wildfire, prescribed burns, or special projects.

## **9. On-site**

That special service which dedicates a fire weather forecaster to a wildfire, prescribed fire, or special projects such that the fire weather forecaster is removed from providing basic services at his/her assigned weather office.

## **Appendix E Fire Weather Observations Sites**

Station Stn# County State Elev(Ft) Lat. Long.

BIENVILLE 5101 SCOTT MS 485 32'18" 89'29"

BUDE 6102 FRANKLIN MS 447 31'24" 90'50"

RIDGELAND 4403 MADISON MS 350 33'31" 89'58"

BLACKCREEK 7802 RANKIN MS 275 32'31" 89'48"

MARION 7202 MARION MS 380 31'12" 89'55"

DELTA 3301 SHARKEY MS 93 32'48" 90'47"

COPIAH 5502 COPIAH MS 150 31'56" 91'22"

COVINGTON 6502 COVINGTON MS 290 31'44" 89'30"

HOLMES 3501 HOLMES MS 220 33'13" 90'11"

LAUDERDALE 5301 LAUDERDALE MS 221 32'22" 88'27"

NOXUBEE 4101 NOXUBEE MS 350 33'16" 88'47"

WARREN 4201 WARREN MS 248 32'21" 90'50"

CATAHOULA 323BE CATAHOULA LA 230 31'30" 92'27"

NESHOBA 4601 NESHOBA MS 554 32'70" 85'00"

RAGLAND HILLS 7401 FOREST MS 285 31'20" 89'10"

## **Appendix F Fire Weather Glossary**

**Active Crown Fire:** A fire in which a solid flame develops in the crowns of trees.

**Aerial Fuels:** Standing and supported live and dead combustibles not in direct contact with the ground and consisting of mainly foliage, twigs, branches, stems, cones, bark, and vines.

**Air Transportable Modular Unit (ASOS):** The computer system which produces most of the

National Weather Service surface observations.

**Aspect:** Direction toward which a slope faces. Available fuel: That portion of the total fuel that would actually burn under various environmental conditions.

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**Advance Weather Interactive Process (AWIPS):** The main computer system that the National Weather Service uses to compose and transmit its forecasts and warnings.

**Backfire:** A fire set along the inner edge of a fire line to consume the fuel in the path of a wildfire and/or change the direction of a force of the fire's convective column.

**Backing Wind:** Wind that changes direction in counter clockwise motion.

**Blowup:** A sudden increase in fire line intensity or rate of spread of a fire sufficient to preclude direct control or to upset existing suppression plans. This is often accompanied by violent convection.

**Burning Index:** An estimate of the potential difficulty of a fire containment as it relates to the flame length at the head of the fire.

**Burn-off temperature at 500 meters:** The forecast temperature at the time in which the mixing height is expected to reach 500 meters.

**Carrier Fuels:** The fuels that support the flaming front of the moving fire.

**Chain:** A unit of measure equal to 66 feet(20 meters).

**County Warning and Forecast Area(CWFA):** The area in which a NWS office is responsible for issuing forecasts and warnings.

**Compactness:** Spacing between fuel particles.

**Creeping Fire:** A fire burning with a low flame and spreading slowly.

**Crown Fire:** A fire that advances from top to top of trees or shrubs more or less independent of surface fire.

**Dead Fuels:** Fuels with no living tissue in which moisture content is governed entirely by absorption or evaporation of atmospheric moisture.

**Dispersion Index:** The dispersion in concentration of air borne pollutants as they spread throughout an increasing volume of atmosphere.

**Drainage Wind:** Normal nighttime airflow directed downslope or down valley, caused by cooling of the air near the earth's surface. Air sinking toward lower elevations is usually quite gentle(light) in nature.

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**Dry Lightning:** A thunderstorm in which little if any precipitation occurs at the ground.

**Duff:** The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil.

**Effective Windspeed:** The midflame windspeed adjusted for the effect of slope on fire spread. Equilibrium Moisture Content: Moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity.

**Extreme Fire Behavior:** Fire behavior characterized by one or more of the following...high rate of spread...profile crowning and/or spotting...presence of fire whirls...strong convection column.

**Eye-level(six foot) Wind:** Wind measured at eye level by a hand-held wind meter. These winds are affected by vegetation and terrain and are often used as mid-flame wind.

**Fine Fuel Moisture:** The moisture content of fuels such as grass, leaves, ferns, tree moss, pine needles, and small twigs.

**Fire Behavior:** The manner in which a fire reacts to the influences of fuel, weather, and topography.

**Fire Behavior Forecast:** A prediction of probable fire behavior, usually prepared by a fire behavior analyst in support of fire suppression or prescribed burning operations.

**Fire Behavior Prediction System(FBPS):** A system that uses a set of mathematical equations to predict certain aspects of fire behavior in wildland fuels when provided with data on fuel and environment.

**Fire Behavior Analyst:** Person responsible to the planning section chief for establishing a weather data collection system and for developing fire behavior predictions based on fire history, fuel, weather, and topography.

**Firebrand:** Any source of heat, natural or human made, capable of igniting wildland fuels.

**Fire Danger:** A general term used to express an assessment of fixed and variable factors such as fire risk, fuels, weather, and topography which influence whether fires will start, spread, and do danger, also the degree of control difficulty to be expected.

**Fire Danger Rating:** A fire management system that integrates the effects of selected fire danger factors into one or more qualitative or numerical indices of current protection needs.

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**Fire Front:** The part of a fire within which continuous flaming combustion is taking place.

**Fire Season:** Period(s) of the year during which wildland fire are likely to occur, spread, and affect resources to warrant organized fire management activities.

**Fire Season:** Violent convection caused by a large continuous area of intense fire.

**Fire Weather Service Area:** A geographical area of responsibility for which the local National Weather Service office provides fire weather products.

**Fire Weather Watch:** A NWS product used to alert fire fighting officials to a potential critical fire weather situation.

**Fire Whirl:** Spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame.

**Flame Depth:** The depth of the fire front.

**Flame Height:** The average maximum vertical extension of flames at the leading edge of the fire front.

**Flare-up:** Any sudden acceleration in rate of spread or intensification of the fire.

**Flash Fuels:** Fuels such as grass, leaves, draped pine needles, fern, tree moss, and some kinds of slash which ignite readily and are consumed rapidly when dry.

**Forecast Period...**Today.....Sunrise to sunset

This Afternoon.,.....Noon to 6 pm

Tonight.....Sunset to sunrise

Tomorrow.....6 am to 6 pm of the following day

**Free-Air Wind:** The wind above the ground level and not influenced by terrain, vegetation, etc.

**Fuel:** Combustible material.

**Fuel Class:** A group of fuels possessing common characteristics.

**Fuel Group:** An identifiable association of fuel elements of distinctive species, form, size arrangement, or other characteristics.

**Fuel Moisture:** The amount of water in a fuel, expressed as a percentage of the oven dry

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weight of the fuel.

**Fuel Moisture Indicator Stick:** A specially prepared stick of known dry weight continuously exposed to the weather and periodically weighed to determine changes in moisture content as an indication of moisture changes in wildland fuels.

**General Fire Weather Forecast(FWF):** A forecast, issued daily during the fire season, that is intended for planning purposes by land management agencies. Also called routine fire weather forecast or simply fire weather forecasts.

**Ground Fire:** Fire that consumes the organic material beneath the surface litter on the ground.

**Gust:** A sudden, brief increase in the speed of the wind.

**Haines Index(HI):** An atmosphere index used to indicate the potential for wildfire growth by measuring the stability and dryness of the wind.

**Head fire:** A fire spreading or set to spread with the wind.

**Heavy Fuels:** Fuels of large diameter, such as logs which ignite and are consumed more slowly than flash fuels.

**Holdover Fire:** A fire that remains dormant for a considerable time.

**Hot Spot:** A particular active part of a fire.

**Humidity Recovery:** The change in humidity over a given period of time generally between late evening and sunrise.

**Ignition Probability:** The chance that a firebrand will cause an ignition when it lands on receptive fuels.

**Incident Meteorologist(IMET):** A specially trained meteorologist who provides site specific weather forecasts and information to fire fighting field personnel.

**Independent Crown Fire:** A fire that advances in the tree crowns alone, not requiring any energy from the surface fire to sustain combustion or movement.

**Inversion:** An increase of temperature with height in the atmosphere.

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**Keetch-Byram Drought Index(KBDI):** A drought index specifically for the fire management applications. It has a numerical range from 0(no moisture deficiency to 800(maximum drought). Light fuels: See fine fuels.

**Lightning Activity Level(LAL):** A number, on a scale from 1 to 6, which reflects frequency and character of cloud-to-ground lightning. The scale from 1 to 5 deals with wet thunderstorms where 5 represents numerous thunderstorms with frequent lightning. 6 represents dry lightning.

**Litter:** The top layer of forest floor, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles.

**Live Fuels:** Living plants, such as trees, grasses and shrubs.

**Long-Range Spotting:** Large glowing firebrands are carried high into the convective column and then fall out downwind beyond the main fire starting new fires.

**Maximum Lvisi:** which relates to the maximum value for low visibilities...such as fog. Values range from 0(lower chance of low visibilities) to 10(highest chance of low visibilities).

**Micro-Remote Environmental Monitoring System(MICRO-REMS):** A mobile weather monitoring station.

**Mid-Flame Wind:** The wind that acts directly on the flaming fire front at a level one-half the flame height.

**Mixing Height:** The depth measured from the surface in which vigorous atmospheric mixing occurs. The mixing height is found at the base of an inversion.

**Moisture of Extinction:** The fuel moisture content at which the fire will not spread.

**National Fire Danger Rating System(NFDRS):** A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

**National Interagency Fire Center(NIFC):** A facility located in Boise,ID, jointly operated by

several federal agencies, dedicated to coordination, logistical support, and improved weather services in support of fire management operations throughout the United States.

**Offshore flow:** Wind blowing from land to water.

**One-Hour Fuel Moisture:** Moisture content of fine fuels.

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**One-Hundred Hour Fuel Moisture:** The moisture content of dead fuels which have diameters between 1 and 3 inches.

**One-Thousand Hour Fuel Moisture:** The moisture content of dead fuels which have diameters between 3 and 8 inches.

**Onshore Flow:** Wind blowing from water to land.

**Outflow Boundary:** A surface boundary that is produced by thunderstorm winds.

**Palmer Index:** A long-term drought index which measures the moisture supply. The index is used primarily for agricultural and hydrologic concerns since it deals with evapotranspiration, soil recharge, runoff, and moisture loss from the surface layer. +4 or high means extreme wet, while -4 or less means extreme drought.

**Passive Crown Fires:** A fire in the crowns of trees in which trees or groups of trees torch, ignited by the pass front of the front.

**Plume-Dominated Wildfire:** A wildland fire whose activity is determined by the convective column.

**Prescribed Burn:** Controlled application of fire to wildland fuels in either their natural or modified state, under specific environmental condition, which allows the fire to be confined to a predetermined area, and produce fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

**Presuppression:** Activities in advance of fire occurrence to ensure effective suppression action. These activities include planning the organization, recruiting, and training, procuring equipment and supplies, maintaining fire equipment, and fire control improvements and negotiating cooperative and/or mutual aid agreements.

**Probability of Ignition:** The chance that a fire brand will cause an ignition when it lands on receptive fuels.



**Probability of Precipitation(POP):** The likelihood of a precipitation event occurring at any given point in the forecast area. A precipitation event is the occurrence of a measurable amount (0.01 inch or greater) of liquid moisture falling during a specific period in the forecast area. As a guidance an expression of uncertainty and areal qualifying terms would have the following relationship to POP values:

POP Statement Value Expression of Uncertainty Area Qualifier

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< or equal 20% Slight Chance Few, Isolated

30-40% Chance Scattered

50% Good Chance Scattered

60-70% Likely Numerous

80-100% No Remark No Remark

**Rate of Spread(ROS):** The relative activity of a fire in extending its horizontal dimensions.

**Red Flag Warning:** A National Weather Service product that is issued when Red Flag conditions(i.e. a critical fire weather situation) are expected.

**Relative Humidity:** The ratio of the amount of moisture in the air to the maximum amount of moisture that air would contain if it were saturated.

**Remote Automatic Weather Station(RAWS):** An apparatus that automatically acquires, processes, and stores local weather data for subsequent transmission to the GOES satellite.

**Routine Fire Weather Forecast(FWF):** A forecast, issued daily during the fire season, that is intended for planning purposes by land management agencies. Also called general Fire Forecast Weather Forecast or simply Fire Weather Forecast.

**Running Fire:** Behavior of a fire spreading rapidly with a well defined head.

**Sea Breeze Boundary:** A surface boundary produced by the push of marine air into the land areas.

**Short-Range Spotting:** Firebrands, flaming sparks, or embers carried by surface winds which start new fires beyond the zone of direct ignition by the main fire.

**Silt/500 M MLT: (Surface Inversion Lifting Temperature/500 meter Mixing Layer Temperature.)** The minimum ambient air temperature in which the heating of the earth's surface should allow smoke particles to rise into the atmosphere.

**Six-Foot Wind:** See eye-level wind.

**Sky Cover:** Clear.....Zero to 1/10 opaque cloud cover.  
Mostly Sunny.....1/10 to 2/10 opaque cloud cover. The prevailing condition, but some clouds may be present either over a portion of the area or for a short time over the entire area.  
Mostly Clear.....Less than 4/10 opaque cloud cover. No

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precipitation. No extremes in weather, visibility, temperature, or wind.  
Partly Cloudy/Partly Sunny.....3/10 to 6/10 cloud cover  
Mostly Cloudy/Considerable Cloudiness...7/10 to 8/10 opaque cloud cover.  
Cloudiness will be subject to variability in amount or location.  
Cloudy.....9/10 or greater opaque cloud cover. The sky is essentially covered throughout the forecast period.

**Slash:** Debris resulting from such natural events as wind, fire, or such human activities as logging, pruning, or brush cutting.

**Slope Percent:** The ratio between the amount of vertical rise of a slope and horizontal distance as expressed in a percent.

**Snag:** A standing dead tree or part of a dead tree from which at least the leaves and smaller branches have fallen.

**Spot Fire:** Fire ignited outside the perimeter of the main fire by a firebrand.

**Spot Forecast:** A specific weather forecast issued for a particular fire at a specific location.

**Spotting:** Behavior of a fire producing sparks or embers that are carried by the wind and which start new fires beyond the zone of direct ignition by the main fire.

**Squall Line:** A narrow band or line of thunderstorms producing gusty winds.

**Stagnation Index:** is a number from 0 to 3 computed from forecast variables that are produced from the NWS gridded models of the National Weather Service. The index is used by fire managers as a guide to smoke management. Forest Managers are cognizant of the need to occasionally restrict open burning in order to reduce atmospheric contaminants. Therefore, managers use the index as part of the overall picture as input to issuing burning permits. A higher index correlates to greater stagnation...while a lower index of 0 or 1 correlates to greater dispersion of the smoke plume.

**Daytime Scale of 0: Burning permitted from sunrise to sunset.**

**Scale of 1: Burning permitted from 1 hour after sunrise until sunset.**

**Scale of 2: Burning permitted from 2 hours after sunrise until sunset.**

**Scale of 3: Burning permitted from 2 hours after sunrise until 1 hour before sunset.**

**Nighttime Scale of 0: Burning permitted from sunset to sunrise.**

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**Scale of 1: Burning permitted until 4 hours after sunset.**

**Scale of 2: Burning permitted until 2 hours after sunset.**

**Scale of 3: No Burning permitted.**

**Suppression:** All the work of extinguishing or confining a fire beginning with its discovery.

**Surface Trough:** A narrow area of low atmospheric pressure located at the surface.

**Sustained Attack:** Continuing fire suppression action until the fire is under control.

**Ten-Hour Fuel Moisture:** The moisture content of dead fuels which have diameters between 1/4 and 1 inch.

**Timelag:** Time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content.

**Torching:** The burning of the foilage of a singled tree or a small group of trees from the bottom up.

**Total Fuel:** All plant material both living and dead that can burn in a worst cast situation.

**Transport Winds:** The mean wind speed and direction of all winds between the surface and the mixing height.

**Transport Winds at 500 meters:** The forecast transport winds at the time in which mixing height is expected to reach 500 meters.

**Tropical Wave:** An area of disorganized convection in the tropics.

**Twenty-Foot Wind:** Wind observed at regular RAW/FTS observation stations, typically forecast by meteorologists, and influenced by vegetation and terrain. These winds are evaluated at either 20 feet above the surface or 20 feet above a solid layer of vegetation.

**Uniform Fuels:** Fuels distributed continuously, thereby providing a continuous path for fire to

spread.

**User(Customer) Agency:** Any agency that relies on fire weather forecast products from the National Weather Service.

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**Vent Index:** It is the product of the mixing height and transport winds. The higher the vent index the better the dispersion of smoke particles.

**Weather Information and Management System(WIMS):** An interactive computer system designed to accommodate the weather information needs of federal and state national resource agencies.

**Wetting Rain:** A widespread rain that over an extended period of time significantly reduces fire danger, Usually greater than 0.10 inches.

**Wildfire:** An unplanned wildland fire requiring suppression action or other action according to agency policy.

**Wildland:** An area in which development is essentially non-existent.

**Wind-Driven Wildland Fire:** A wildland fire that is controlled by a strong consistent wind.

## **Appendix G High Fire Danger Forecast Examples:**

Below is an example of a PRACTICE RED FLAG WARNING

MESSAGE(JANRFWJAN into AWIPS)  
JANRFWJAN  
TTAA00 KJAN XXXXXX  
RED FLAG WARNING  
NATIONAL WEATHER SERVICE JACKSON,MS  
1030 AM CDT TUE AUG XX, XXXX  
MSZ040>044-047>050-DDHHMM  
...RED FLAG WARNING FOR STRONG NORTHWEST WINDS AND LOW HUMIDITIES  
FROM NOON TO SUNSET OVER WEST CENTRAL MISSISSIPPI...  
FIRE WEATHER ZONES INCLUDED IN THIS WARNING ARE  
MSZ040>044-047>050-DDHHMM  
DISCUSSION: A STRONG COLD FRONT WILL MOVE INTO WEST CENTRAL  
MISSISSIPPI LATE THIS MORNING. THE STRONGEST WINDS WILL DEVELOP DURING  
THE LATE AFTERNOON. WIND SPEEDS WILL INCREASE IN THE AFTERNOON FROM

15 TO 20 MPH TO 25 TO 30 MPH WITH GUSTS TO 40 MPH. RELATIVE HUMIDITIES WILL RANGE FROM 20 TO 25 PERCENT. (ALSO LIST ANY BURNING BANDS AS WELL AS SIZE AND LOCATIONS OF MAJOR FIRES THAT MAY BE IN PROGRESS) PLEASE ADVISE THE APPROPRIATE OFFICIALS OR FIRE CREWS IN THE FIELD OF THIS RED FLAG WARNING.

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Below is an example of a PRACTICE FIRE WEATHER WATCH MESSAGE(JANRFWJAN...to be sent from Xnow into AWIPS)

JANRFWJAN

TTAA00 KJAN XXXXXX

FIREWEATHER WATCH

NATIONAL WEATHER SERVICE JACKSON,MS

1030 AM CDT SUN XX,XXXX

MSZ0XX>0XX-DDHHMM

...FIRE WEATHER WATCH FOR ALL FORESTRY DISTRICTS THROUGH TUESDAY...

.WEATHER SYNOPSIS...THE WEATHER PATTERN OVER THE LAST FEW DAYS HAS DRIED THE RECENT RAINS OF LAST WEEK...OVER AREA GRASSLANDS AND FOREST AREAS. HIGH PRESSURE WILL AID IN DRYING CONDITIONS ACROSS THE REGION THROUGH TUESDAY. MINIMUM RELATIVE HUMIDITIES WILL TAKE A DIP INTO THE 30 TO 35 PERCENT RANGE MONDAY AND TUESDAY. WINDS WILL BE NORTH TO EAST OVER THE REGION THROUGH TUESDAY...SUSTAINING AROUND 15 MPH DURING THE AFTERNOON WITH GUSTS TO 25 MPH EXPECTED OVER THE GRASSLANDS OR OPEN AREAS MONDAY AND TUESDAY. THESE WIND CONDITIONS WILL AGGRAVATE THE HIGH FIRE DANGER POTENTIAL ACROSS THE REGION. (ALSO LIST ANY BURNING BANDS AS WELL AS SIZE AND LOCATIONS OF MAJOR FIRES THAT MAY BE IN PROGRESS).

DISTRICT LOCATION

MS0XX>0XX-XXXXXX

COUNTIES OR PARISHES LISTED

TONIGHT...

WEATHER...CLEAR

TEMPERATURES...MIDDLES 50S

MAXIMUM HUMIDITY...75 TO 80%

WINDS...NORTHEAST 15 MPH

MONDAY...

WEATHER...SUNNY

TEMPERATURES...MIDDLE 80S

MINIMUM HUMIDITY...30 TO 35%

WINDS...EAST 15 TO 25 MPH

MONDAY NIGHT...

WEATHER...PARTLY CLOUDY  
TEMPERATURES...NEAR 60  
MINIMUM HUMIDITY...60 TO 65%  
WINDS...NORTH 15 TO 25 MPH.

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THE NEXT FIRE WEATHER WATCH UPDATE WILL BE ISSUED TOMORROW.

Below is an example of a FIRE DANGER STATEMENT MESSAGE(JANSPSJAN)  
(FROM SUMMER OF 2012)

#### HIGH FIRE DANGER CONDITIONS CONTINUE ACROSS THE REGION

According to the Mississippi Forestry Commission, the drought conditions have made burning extremely hazardous. Conditions are such that a spark from equipment, the heat from a catalytic converter, or any heat source will start a fire. Windy conditions complicate the burning process further by making it impossible to contain burning debris or trash, and by sending any wildfires quickly out of control. Lightning strikes from thunderstorms can quickly start fires. Fires place the Mississippi Forestry Commission, fire departments, and other fire control services in life threatening situations, and can endanger entire communities. Please use caution and help prevent forest and grass fires. Since July 1st over 34,100 have been consumed in over 2600 wildfires across Mississippi. The Mississippi Forestry Commission does not feel that any reason for burning can be justified at this time. Under such extreme conditions, we urge the public to comply with the Governor=s ban and refrain from any outdoor burning. When barbecuing take the utmost care. Do not dump ashes unless you are certain they are completely out. Live coals can burn far as long as one or two days after being used. Occasionally, there will be some relief to the high fire danger in the form of scattered showers and thunderstorms. However, such relief will only be temporary with high fire danger conditions returning quickly after a few days of drying.

### **Appendix H Fire Weather Forecasts:**

FIRE WEATHER PLANNING FORECAST FOR EXTREME SOUTHEAST...  
ARKANSAS...NORTHEAST LOUISIANA...AND CENTRAL MISSISSIPPI  
NATIONAL WEATHER SERVICE JACKSON,MS  
545 AM CST MON FEB 28 2008

.SYNOPSIS...EXPECT LIGHT RAIN SHOWERS...PATCHY DRIZZLE AND CLOUDS  
AROUND THIS MORNING AS A COLD FRONT APPROACHES THE FORECAST AREA  
FROM THE WEST. THIS FRONT WILL MOE THROUGH THE REGION LATER  
TODAY...SHOVING ANY PRECIPITATION OFF TO THE EAST. A WIND SHIFT FROM  
WEST TO NORTHWEST WILL ACCOMPANY THE FRONTAL PASSAGE. COOL

TEMPERATURES WILL CONTINUE FOR THE NEXT FEW DAYS WITH THE NEXT CHANCE OF PRECIPITATION COMING IN THE WEST TUESDAY NIGHT...AND ELSEWHERE WEDNESDAY.

ARZ074-075-LAZ007>009-015-016-282330-

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WEST CARROLL-MOREHOUSE-RICHLAND-MADISON-EAST  
CARROLL-ASHLEY-CHICOT  
525 AM CST MON FEB 28 2014

...EXTREME SOUTHEAST ARKANSAS AND NORTHEAST LOUISIANA...

	TODAY	TONIGHT	TUE
CLOUD COVER	PCLDY	PCLDY	MCLEAR
PRECIP TYPE	NONE	NONE	NONE
CHANCE PRECIP(%)	0	0	0
TEMP (24 H TREND)	57 (+1)	32 (-14)	56
RH % (24 H TREND)	34 (-33)	82 (-13)	27
20FT WND/AM (MPH)	LGT/VAR		LGT/VAR
20FT WND/PM (MPH)	LGT/VAR	LGT/VAR	LGT/VAR
RAIN DURATN(HRS)	0	0	0
RAIN AMOUNTS(INS)	0.00	0.00	0.00
SILT/500 M MLT(F)	53		53
MIXING HGT(M AGL)	1690		1431
MIXING HGHT(FT AGL)	5544		4695
TRANSPORT WND(M/S)	N 10		NW 9
TRANSPORT WND(MPH)	N 23		NW 20
VENT INDEX (METRIC)	16900		12879
VENT INDEX (ENGLISH)	127512		93900
STAG INDEX	1	2	3
CATEGORY DAY	5		4
STABILITY	D	E	C
WINDSHIFTS			
PRECIP BEGINS			
PRECIP ENDS			
MAXIMUM LVORI	0	0	0
DISPERSION INDEX (%)	15	8	10

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 7...

.WEDNESDAY...MOSTLY CLOUDY. A 40 PERCENT CHANCE OF RAIN. LOWS IN THE LOWER 30S. HIGHS IN THE UPPER 40S. LIGHT WINDS..

.THURSDAY...MOSTLY CLOUDY. LOWS IN THE MID 30S. HIGHS IN THE LOWER 60S.  
SOUTH WINDS 5 TO 10 MPH.

.FRIDAY...MOSTLY CLOUDY. LOWS IN THE UPPER 30S. HIGHS IN THE UPPER 50S.  
NORTHWEST WINDS 5 TO 10 MPH.

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.SATURDAY...PARTLY CLOUDY. LOWS IN THE LOWER 40S. HIGHS IN THE LOWER  
60S. SOUTHWEST WINDS 5 MPH.

.SUNDAY...PARTLY CLOUDY. LOWS IN THE LOWER 40S. HIGHS IN THE MID 60S.  
NORTH WINDS 10 MPH.

\$\$

FORESTRY FIRE WEATHER PLANNING FORECAST FOR EXTREME SOUTHEAST  
ARKANSAS...

NORTHEAST LOUISIANA... AND CENTRAL MISSISSIPPI

NATIONAL WEATHER SERVICE JACKSON,MS

219 PM CST SUN FEB 27 2014

.SYNOPSIS...EXPECT SCATTERED RAINSHOWERS TO CONTINUE THROUGH MOST  
OF THE NIGHT. MOST OF THE RAINFALL SHOULD BE OF THE NONWETTING VARIETY.  
COOLER AND DRIER AIR WILL BEGIN TO MOVE INTO THE AREA FROM THE NORTH  
TOMORROW AFTERNOON. TIGHT PRESSURE GRADIENTS WILL LEAD TO BREEZY  
CONDITIONS. THERE WILL BE A SLIGHT CHANCE FOR SOME PRECIPITATION ON  
WEDNESDAY MORNING AS A WEAK DISTURBANCE MOVE THROUGH THE SOUTHERN  
DISTRICTS.

ARZ074-075-LAZ007>009-015-016-280830-

WEST CARROLL-MOREHOUSE-RICHLAND-MADISON-EAST

CARROLL-ASHLEY-CHICOT

219 PM CST SUN FEB 27 2008

...EXTREME SOUTHEAST ARKANSAS AND NORTHEAST LOUISIANA...

	TONIGHT	MON	MON NIGHT	TUE
CLOUD COVER	CLOUDY	MCLDY	MCLDY	PCLDY
PRECIP TYPE	RAIN	SHOWERS	NONE	NONE
CHANCE PRECIP(%)	40	10	0	0
TEMP (24 H TREND)	40 (-6)	57 (+1)	33	53
RH % (24 H TREND)	100 (+13)	41 (-15)	82	36
20FT WND/AM (MPH)		LGT/VAR		LGT/VAR
20FT WND/PM (MPH)	NW 6	NW 8	LGT/VAR	LGT/VAR
RAIN DURATN(HRS)	12	1	0	0
RAIN AMOUNTS(INS)	<0.10	<0.10	0.00	0.00
SILT/500M MLT (F)		51		44
MIXING HGT(M AGL)		1676		1493
MIXING HGHT(FT AGL)		5498		4897
TRANSPORT WND(M/S)		NW 12		NW 8



TRANSPORT WND(MPH)		NW 26		NW 18
VENT INDEX (METRIC)		200112		11944
VENT INDEX (ENGLISH)		142948		88146
STAG INDEX	1	1	3	0
CATEGORY DAY		5		4
		-48-		
STABILITY	E	C	E	B
WINDSHIFTS				
PRECIP BEGINS	6 PM CONTINUING			
PRECIP ENDS	CONTINUING 7 AM			
MAXIMUM LVORI	0	0	0	0
DISPERSION INDEX (%)	8	12	10	23

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 7...

.WEDNESDAY...MOSTLY CLOUDY. A 40 PERCENT CHANCE OF RAIN SHOWERS. LOWS IN THE MID 30S. HIGHS IN THE LOWER 50S. NORTHEAST WINDS UP TO 5 MPH.

.THURSDAY...PARTLY CLOUDY. LOWS IN THE MID 30S. HIGHS IN THE LOWER 50S. SOUTH WINDS 5 TO 10 MPH.

.FRIDAY...PARTLY CLOUDY. LOWS IN THE UPPER 30S. HIGHS IN THE UPPER 50S. NORTHWEST WINDS 5 TO 10 MPH.

.SATURDAY...PARTLY CLOUDY. LOWS IN THE UPPER 30S. HIGHS IN THE LOWER 60S. SOUTHWEST WINDS 5 MPH.

.SUNDAY...PARTLY CLOUDY. LOWS IN THE LOWER 40S. HIGHS IN THE MID 60S. NORTH WINDS 10 MPH.

\$\$

## Appendix I National Fire Danger Rating System(NFDRS) Forecast:

The National Fire Danger Rating System measures wildfire danger at observation sites throughout the United States. A Fire Danger Rating in NFDRS parlance means a daily evaluation of the potential for wildfire ignition, growth, and intensity over a broad sampling area. NFDRS takes into account many different vegetation types throughout the United States, their annual growth cycles, seasonal climate trends, local topography and the effect of daily weather

changes. NFDRS observations are taken once per day. NFDRS forecasts are not intended to be site specific like the Fire Behavior Prediction System but rather a general overview of fire danger. Effective fire suppression planning depends heavily on NFDRS because it is an objective tool for predicting the difficulty of suppressing a wildfire. The National Weather Service role in NFDRS is forecasting weather input which, combined with customer input, allow the NFDRS software to predict the next days fire danger indices. Daily weather observations entered into NFDRS by the fire agencies form the basis of the forecast input by

the NWS. Each NFDRS reporting site is located at a spot which is considered to be representative of the terrain and fuel types and dominant in that area. Many NFDRS reporting sites are also RAWs stations. If required in the future, NFDRS forecast will be issued once a

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day, but updated if necessary. NFDRS Forecast Structure Format of the NFDRS Product. The NFDRS Forecast should follow the format specified. The forecast is based upon mid-afternoon values, normally 1300 LST, and not necessarily maximum or minimum readings. Ideally, the NFDRS is supposed to model the a worst case fire conditions possible during the day. A list of fire weather observations will be transmitted through AWIPS using the FWO product ID. This product contains weather observations entered into NFDRS by the fire agencies and should have a header above the data which states, Listing of Observations. Zone average forecasts will be applied to all NFDRS sites within the fire weather zone. It is also possible to do an individual station forecast apply only to one specific site in any fire weather zone. In either case, this forecast is valid at observation time tomorrow.

### **Forecast Elements**

NFDRS forecasts typically consists of the following elements.

ZONE,NO.YYMMDD,13,WX,TEMP,RH,LAL1,LAL2,WIND,10HR,TX,TN,RHx,RHn,  
PD1,PD2,WETFLAG

a. NO Fire Weather Zone Number(or individual NFDRS site#)

b. YYMMDD Date(should be valid tomorrow)

c. 13 Always 1300 LST

d. WX Weather valid at 1300 LST tomorrow

0 clear

1 scattered clouds(1/8 to 4/8)

2 broken clouds (5/8 to 7/8)

3 overcast clouds (more than 7/8)

4 foggy

5 drizzle

6 raining

7 snowing or sleeting

8 showers(in sight or at the station)

9 thunderstorm

e. TEMP Temperature in deg F valid 1300 LST/trend + or -

f. RH relative humidity in percent valid at 1300 LST/trend

+ or -.

g. LAL1 Lightning Activity Level 1400 LST to 2300 LST

h. LAL2 Lightning Activity Level 2300 LST to 2300 LST

i. WIND windspeed in mph valid at 1300 LST (or wind speed trend +/-

j. 10HR 10 hour timelag fuel moisture in percent valid at 1300

LST(trend +/-)

k. TX Maximum temperature for tomorrow

l. TN Minimum temperature for tomorrow

m. Rhx Maximum humidity for tomorrow

-50-

n. Rh Minimum humidity for tomorrow

o. PD1 Precipitation duration in hours 1400 LST to 0500 LST

p. PD2 Precipitation duration in hours 0500 LST to 1400 LST

q. WETFLAG Y or N. This indicates whether liquid water will be on the fuels at 1300 LST. Use with caution - it will reset all indices to zero!

Each forecast element must be separated by a comma without a space. Non-forecasted elements are represented by a coma. Below is an example of a NFDRS forecast formatted for transmission in AWIPS.

JANFWMJAN

TTAAOO KJAN DDHHMM

Posted once a day before the afternoon forecast.

Bude Station : FCST, 226102,020826,13,3,081,55,1,1,NE,05,M,086,65,100,45,0,0,N  
Copiah Station: FCST, 225502,020826,13,3,081,55,1,1,NE,05,M,084,66,100,45,0,0,N  
Oktibbeha Station FCST 223301,020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Ridgeland Station:FCST, 224403,020826,13,3,082,55,1,1,NE,05,M,085,66,100,45,0,0,N  
Marion Station: FCST, 227202,020826,13,3,082,55,1,1,NE,05,M,085,66,100,45,0,0,N  
Bienville Station: FCST, 225101,020826,13,3,081,55,1,1,NE,05,M,086,65,100,45,0,0,N  
Noxubee Station FCST, 224101, 020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Ashley Station: FCST, 037403,020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Covington Station FCST, 226502, 020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Delta Station : FCST, 223501,020826,13,3,081,55,1,1,NE,05,M,086,65,100,45,0,0,N  
Warren Station FCST, 224201,020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Lauderdale Station FCST, 225301, 020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Neshoba Station FCST, 224601,020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N  
Ragland Hills Station FCST, 227401,020826,13,3,081,53,1,1,NE,05,M,084,65,100,42,0,0,N

### NFDRS Forecast Output

When the NWS NFDRS Forecast is sent to the WIMS, the product is automatically combined with the information that is entered by land management personnel to provide the NFDRS fire index forecast. At roughly 1500 LST the AWIPS product NMCFWOXXX should be available if the forecasted values were accepted into the NFDRS System. The product will look almost exactly like the observed value reported an hour earlier, but the header should read:Listing of Forecasted Observations. If the page is blank, some formatting error prevented the forecast values from being accepted.

## Appendix J Fire Matrix Forecast

*Fire Weather Matrix Forecast (product identifier JANAFWJAN; WMO Header FNUS54 KJAN):* NFDRS forecasts from the Jackson NWS office are issued twice a day, early in the morning by 8 am and in the afternoon by 4 pm. The product gives two hourly forecast for the following items through 36 hours for all over our Central Mississippi Counties, Northeast Louisiana parishes and two Southeast Arkansas counties.

The Northeast Louisiana parishes covered by WFO Jackson Fire Matrix forecast include Morehouse, West Carrol, East Carrol, Richland, Madison, Franklin, Tensas, Catahoula and Concordia.

The two Southeast Arkansas counties covered by WFO Jackson Fire Matrix forecast are Ashley and Chicot counties.

The Central Mississippi counties covered by WFO JAN Fire Matrix Forecast include: Adams, Attala, Bolivar, Carroll, Choctaw, Claiborne, Clay, Copiah, Covington, Franklin, Forrest Grenada, Hinds, Holmes, Humphreys, Issaquena, Jasper, Jefferson, Jefferson Davis, Jones, Kemper, Lamar, Lauderdale, Lawrence, Leake, Leflore, Lowndes, Madison, Marion, Neshoba, Newton, Oktibbeha, Rankin, Scott, Simpson, Sharkey, Sunflower, Warren, Washington, Webster, and Winston

The product has the following parameters: the routine fire matrix forecast offers additional parameters, including precipitation amount, precipitation timing and duration, mixing height and transport winds in both english and meters, with expanded parameters of vlri maximum and fwdi(fire weather danger index). Fire Weather Danger Index(fwdi) goes from 1 low to 5 extreme. It is the potential for fire starts and the amount of suppression required.

ZONE FIRE WEATHER MATRIX  
NATIONAL WEATHER SERVICE JACKSON MS  
419 AM CDT SAT AUG 2 2014  
MSZ060-030030-  
ADAMS-  
419 AM CDT SAT AUG 2 2014

DATE

SAT 08/02/14

SUN 08/03/14

CDT 2HRLY	04	06	08	10	12	14	16	18	20	22	00	02	04	06	08	10	12	14	16
SKY	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
MC																			

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WEATHER COV	SC	CH	CH	CH	CH	CH	CH	SC	SC	SC	SC	SC	SC	CH	CH	CH	CH	CH	CH
WEATHER TYPE	RW	RW	TS	TS	TS	TS	TS	TS	TS	TS	RW	RW	RW	TS	TS	TS	TS	TS	TS
TEMP	72	75	79	84	85	85	82	79	76	74	73	72	71	73	78	84	85	86	85
RH	93	87	77	63	62	63	69	76	83	87	89	90	93	88	81	66	65	63	62
20FT DIR	SE	E	NE	NE	NE	NE	NE	NE	E	E	E	NE	NE	NE	E	NE	NE	NE	N
20FT SPD	2	5	5	6	6	6	6	5	2	1	1	1	2	5	6	7	8	8	9
20FT GUST	2	6	7	8	9	9	9	7	2	1	1	1	2	6	8	9	12	12	10
MIX HGT (HFT)	4	5	14	44	63	58	24	3	3	3	3	3	2	6	19	47	66	62	51
MIX HGT (HM)	1	1	4	13	19	17	7	0	1	1	1	0	0	1	6	14	20	19	50
TRAN DIR	SE	SE	S	SE	SE	E	E	E	E	E	E	E	NE	E	E	E	E	E	E
TRAN SP (MPH)	10	10	9	8	8	10	11	11	9	8	8	6	6	9	12	11	10	9	8
TRAN SP (M/S)	4	4	4	3	3	4	5	5	4	3	3	3	3	4	5	5	4	4	4
LVORI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FWDI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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## Appendix K Hazardous Weather Outlook

In times when wildfire activity or potential fire danger from dry conditions is expected to threaten lives or property , NWS offices are encouraged to issue Special Weather Statements under the heading of Hazardous Weather Outlook. The decision of when to issue this product is left to the discretion of each forecaster as well local NWS office policies.

*The Hazardous Weather Outlook (product identifier JANHWOJAN; WMO Header FLUS44 KJAN):* are issued several times a day.

WFO Jackson uses a four level color coded system for showing potential threat of fire danger due to prolong dry conditions...esp with a Fire Weather Watch or Red Flag Warning in effect. The wording below can be adjusted to any particular fire weather conditions.

**A. Extreme.....**Very strong winds in excess of Red Flag Warning conditions combined with limited to moderate low humidity. Fires will spread quickly and spot fires are common. Fire control is difficult due to strong winds.

**B. High.....**Open burning should not be attempted. High winds and extreme dry periods lead to extreme burning conditions. Open fires can quickly escape and area very difficult to control,

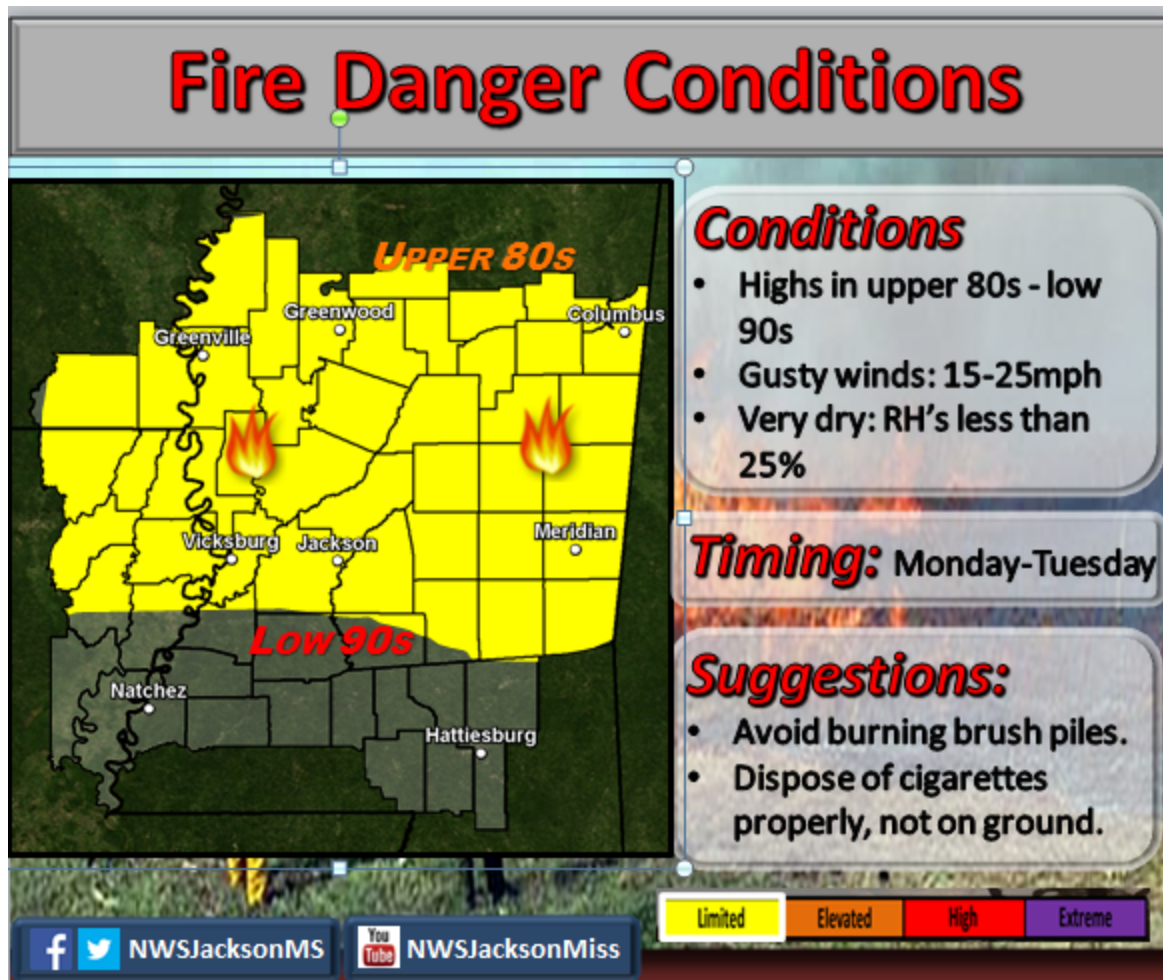
even for experience firefighters. Conditions can meet minimum conditions for Red Flag Warnings in most cases.

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**C. Elevated....**Any open burning is discouraged due to increased wind and lower humidity...except by experience fire personnel. Increasing winds and lower humidity conditions contribute to drying fuels. Fires escapes control more easily and containment is difficult for inexperienced fire personnel. Limited open burning is usually safe with proper containers and precautions under Limited fire danger conditions.

**D. Limited...**Open burning is usually safe with proper containers and precautions under limited fire conditions.(same as above)

**Forecast is updated when changes in the dry fire weather or meteorological conditions do not reflect the forecast.**



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ARZ074-075-LAZ007>009-015-016-023>026-MSZ018-019-025>066-072>074-131900-

ASHLEY-CHICOT-MOREHOUSE-WEST CARROLL-EAST CARROLL-RICHLAND-MADISON LA-FRANKLIN LA-TENSAS-BOLIVAR-

SUNFLOWER-LEFLORE-GRENADA-CARROLL-MONTGOMERY-WEBSTER-CLAY-LOWNDES-CHOCTAW-OKTIBBEHA-WASHINGTON-HUMPHREYS-HOLMES-ATTALA-WINSTON-NOXUBEE-ISSAQUENA-SHARKEY-YAZOO-MADISON

MS-LEAKE-NESHOBIA-KEMPER-WARREN-HINDS-RANKIN-SCOTT-NEWTON-LAUDERDALE-CLAIBORNE-SIMPSON-SMITH-JASPER-CLARKE-JONES-

200 PM CDT TUE MAR 24 2014

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF SOUTHEAST ARKANSAS...NORTHEAST LOUISIANA...CENTRAL MISSISSIPPI...NORTH CENTRAL MISSISSIPPI.

.DAY ONE...TONIGHT AND WEDNESDAY...

FIRE WEATHER

RISK....LIMITED

TIMING REMAINDER OF TODAY THROUGH TONIGHT

THERE IS A LIMITED RISK OF FIRE DANGER CONDITIONS ACROSS MOST OF CENTRAL MISSISSIPPI...SOUTHEAST ARKANSAS AND MOST OF NORTHEAST LOUISIANA. LIMITED OPEN BURNING IS USUALLY SAFE WITH PROPER CONTAINERS AND PRECAUTIONS SHOULD BE TAKEN UNDER LIMITED FIRE DANGER CONDITIONS.

.DAYS TWO THROUGH SEVEN...WEDNESDAY NIGHT THROUGH MONDAY...

THE PROBABILITY FOR WIDESPREAD HAZARDOUS WEATHER IS LOW.

.SPOTTER CALL TO ACTION STATEMENT...

THE ACTIVATION OF STORM SPOTTERS...HAM RADIO OPERATORS...AND EMERGENCY MANAGEMENT PERSONNEL IN SUPPORT OF SEVERE WEATHER OPERATIONS IS NOT EXPECTED THROUGH NEXT MONDAY.

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## **Appendix L**

### **Fire Weather Internet Sites**

WFO Memphis, TN.....<http://www.srh.noaa.gov/meg/?n=fireweather>

WFO Jackson, MS.....[http://www.srh.noaa.gov/jan/?n=fire\\_weather](http://www.srh.noaa.gov/jan/?n=fire_weather)

WFO New Orleans, LA.....[http://www.srh.noaa.gov/lix/?n=fire\\_wx](http://www.srh.noaa.gov/lix/?n=fire_wx)

WFO Mobile, AL.....<http://www.srh.noaa.gov/mob/?n=fire>

Southern Region Fire Weather..... <http://www.srh.noaa.gov/msd/firewx/>

National Fire Weather Guidance <http://www.spc.noaa.gov/fire/>

### **State and Federal Forestry Agencies**

Mississippi Forestry Commission <http://www.mfc.state.ms.us>



Louisiana Forestry Commission <http://www.ldaf.state.la.us>

Arkansas Forestry Commission <http://www.forestry.state.ar.us>

National Park Service <http://www.nps.gov>

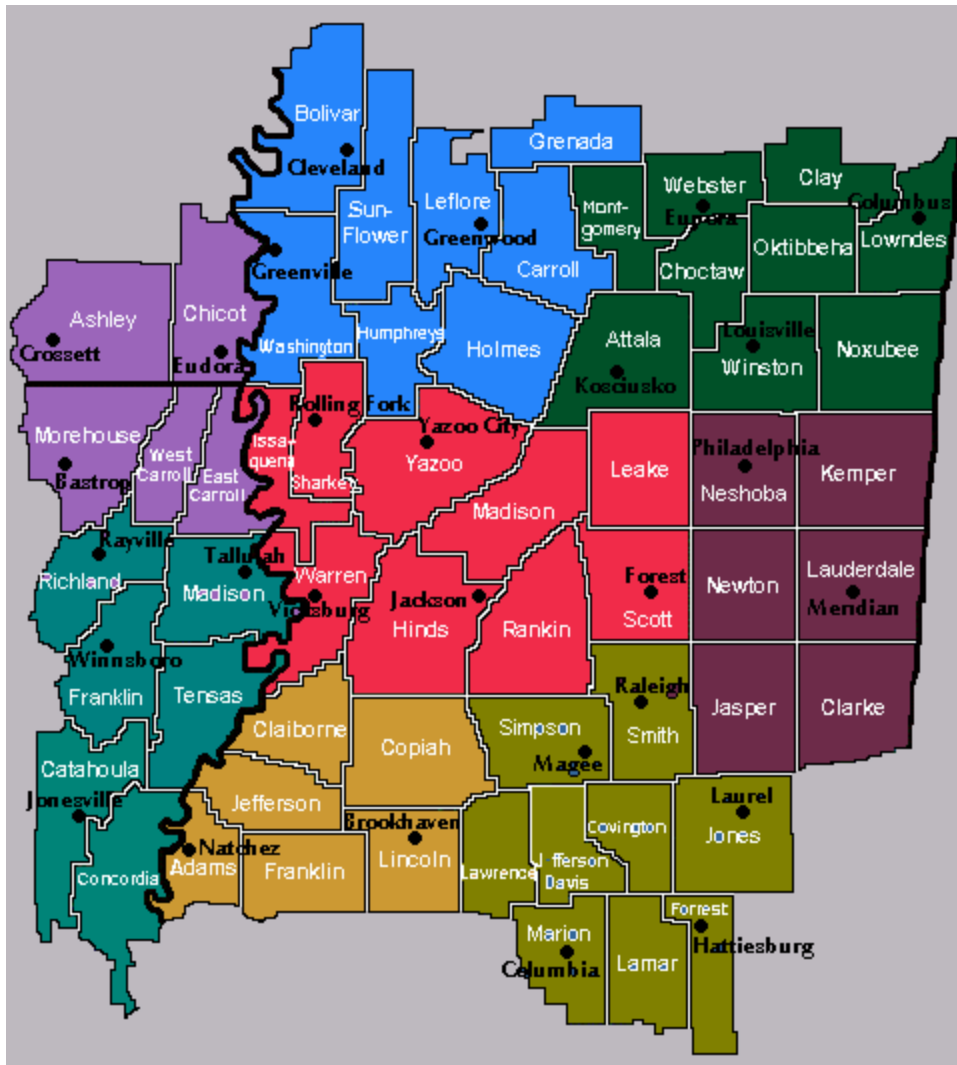
Fish and Wildlife Service <http://www.fws.gov>

Natchez Trace Parkway <http://www.nps.gov/natr>

US Forest Service <http://www.fs.fed.us>

## Appendix M

## Map of the Fire Weather Zones

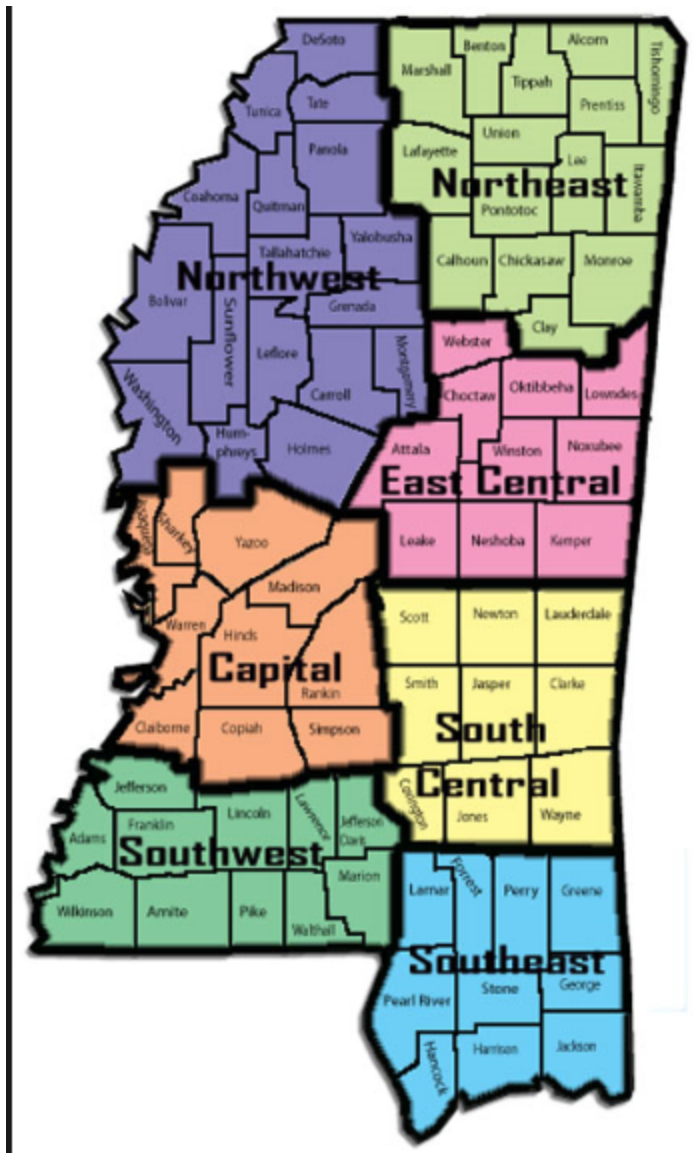


## **Appendix N Area Forecast Discussion**

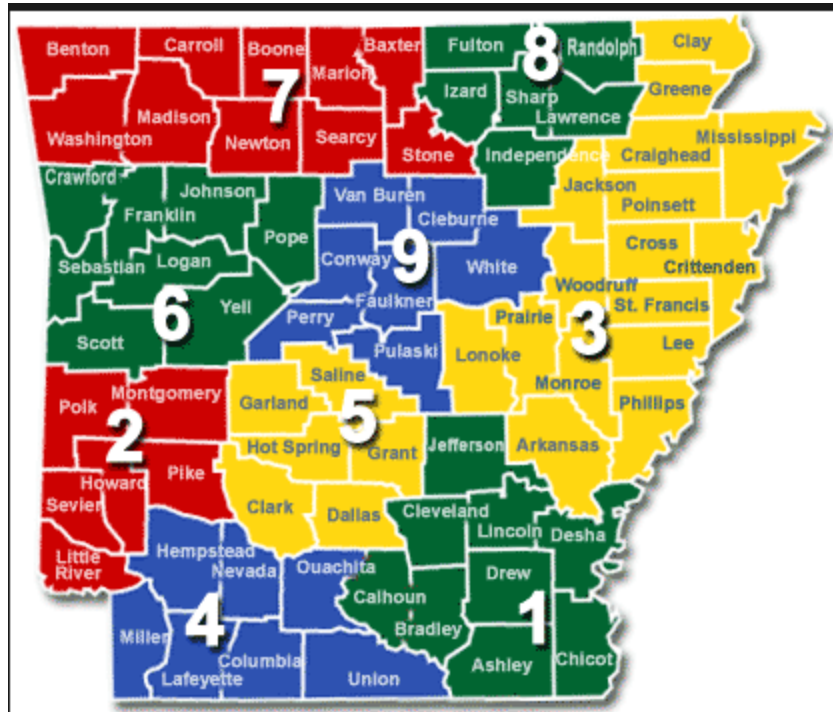
If any kind of weather is going on that will hinder Fire Operations or any kind of outdoor burning...a brief synopsis should be mentioned under .FIRE WEATHER in the AFD. If a Red Flag Warning is in progress...it should be termed .REDFLAG WARNING in the AFD.

## **Appendix O State Forestry Districts for the ArkLaMiss**

**For Mississippi**



For Arkansas...



For Louisiana....

